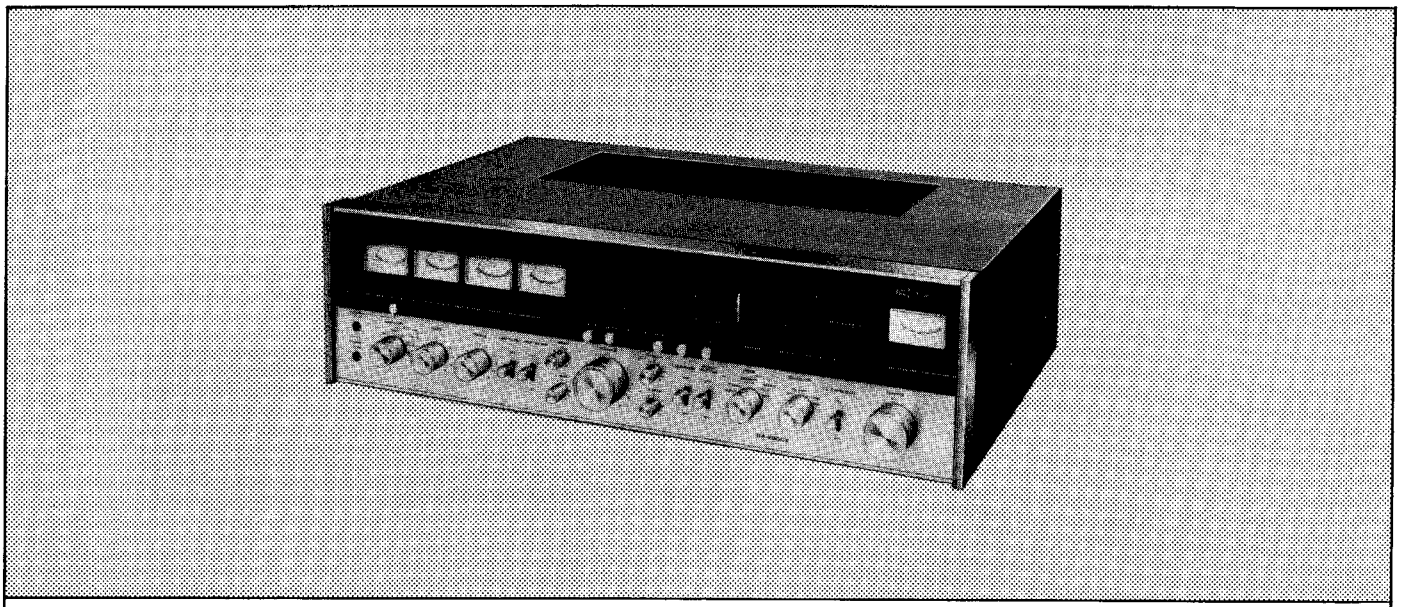
ORDER NO. AD 7407-088

Service Manual

Technics
HI-FI COMPONENTS
Technics



CD-4 FM/AM 4 CHANNEL/2 CHANNEL RECEIVER MODEL SA-8500X

TECHNICAL SPECIFICATIONS (Specifications are subject to change without notice for further improvement)

AMPLIFIER SECTION

Music power (IHF) :		
4 CH operation		260W (4Ω), 180W (8Ω)
2 CH Balanced Transformerless operation		250W (8Ω)
1 kHz RMS (continuous) power :		
4 CH operation		
All ch. driven		40W+40W+40W+40W (4Ω)
		34W+34W+34W+34W (8Ω)
2 CH Balanced Transformerless operation		
Both ch. driven		85W/85W (8Ω)
20 Hz~20kHz RMS (continuous) power :		
4 CH operation		
All ch. driven		28W+28W+28W+28W (4Ω)
		26W+26W+26W+26W (8Ω)
2 CH Balanced Transformerless operation		
Both ch. driven		80W+80W (8Ω)
Total harmonic distortion :		0.5%
Intermodulation distortion (60 Hz : 7 kHz=4 : 1, SMPTE) :		0.7%
Power bandwidth (all ch. driven at 8Ω) :		5Hz~40kHz, −3dB
Frequency response :	**PHONO**	RIAA standard curve ±1dB
	AUX	7Hz~70kHz, +0dB −3dB
Residual hum & noise :		1.5mV
Input sensitivity & impedance :	**PHONO**	2mV/50kΩ
	AUX	180mV/30kΩ
	PLAYBACK	180mV/30kΩ
S/N (IHF, A) :	**PHONO**	70dB
	AUX	90dB
Tone controls :	**BASS**	50Hz, +11dB~ −11dB
	TREBLE	10kHz, +10dB~ −10dB
Loudness control (volume at −30 dB) :		50Hz, +10dB
Filters :	**LOW**	200Hz, −6dB/oct
	High	7kHz, −6dB/oct
Audio muting :		−20dB
REC OUT :		180mV
Damping factor :		10 (4Ω), 20 (8Ω)
Load impedance :	**MAIN or REMOTE**	4~16Ω
	MAIN+REMOTE (or Balanced Transformerless)	8~16Ω

FM TUNER SECTION

Frequency range :		88~108MHz
FM sensitivity (IHF) :		1.9μV
Alternate channel selectivity :		65dB
Harmonic distortion :	**MONO**	0.3%
	STEREO	0.4%
S/N :		65dB
Frequency response :		20Hz~13kHz, ±1dB
Image rejection (at 98 MHz) :		55dB
IF rejection (at 98 MHz) :		60dB
Spurious response rejection (at 98 MHz) :		60dB
Capture ratio :		1.5dB
AM suppression :		50dB
Stereo separation (at 1 kHz) :		40dB
Leak carrier (19 kHz, 38 kHz) :		50dB

AM TUNER SECTION

Frequency range :	520~1610kHz
Sensitivity :	20μV
Selectivity :	25dB
Image rejection (at 1000 kHz) :	40dB
IF rejection (at 1000 kHz) :	40dB

GENERAL

Power consumption :	615W
Power supply :	110/120/220/240V 50/60Hz
Dimensions (W x H x D) :	21-11/32" x 6-3/32" x 15-9/16"
	(542 x 155 x 395)mm
Weight :	37.3 lb. (16.9kg)

Matsushita Electric
Matsushita Electric Trading Co., Ltd.
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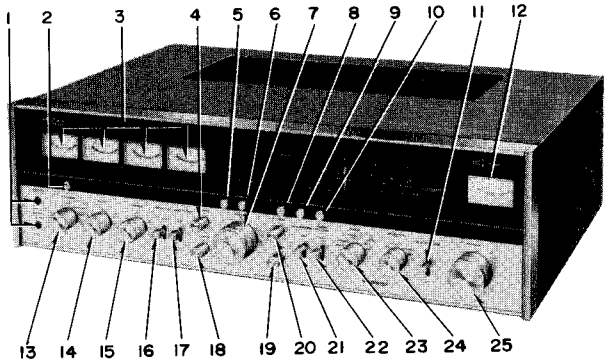
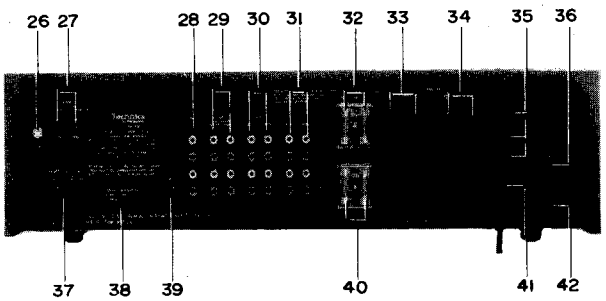
■ LOCATION OF CONTROLS

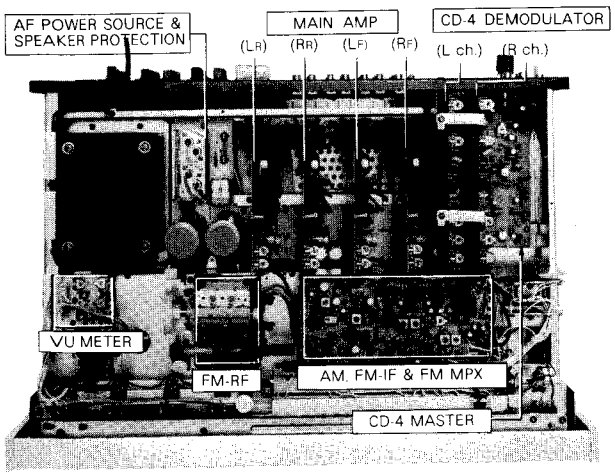


1. HEADPHONES JACK
2. POWER SOURCE SWITCH (S13)
3. VU [OUTPUT LEVEL] METERS
4. LEFT-FRONT CH. LEVEL CONTROL
5. VU METER RANGE SWITCH (S3)
6. FM MUTING SWITCH (S4)
7. VOLUME CONTROL
8. 4CH. TAPE MONITOR 1 SWITCH (S5)
9. 4CH. TAPE MONITOR 2 SWITCH (S6)
10. 4CH. TAPE MONITOR 3 SWITCH (S7)
11. CD-4 HI-BLEND SWITCH (S14)
12. SIGNAL METER
13. SPEAKERS SELECTOR SWITCH (S12)
14. BASS CONTROL
15. TREBLE CONTROL
16. LOW FILTER SWITCH (S11)
17. HIGH FILTER SWITCH (S10)
18. LEFT-REAR CH. LEVEL CONTROL
19. RIGHT-REAR CH. LEVEL CONTROL
20. RIGHT-FRONT CH. LEVEL CONTROL
21. LOUDNESS SWITCH (S8)
22. AUDIO MUTING SWITCH (S9)
23. MODE SWITCH (S2)
24. SELECTOR SWITCH (S1)
25. TUNING CONTROL

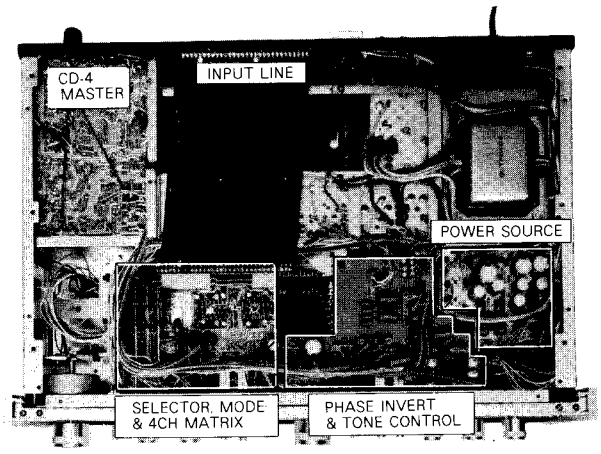
26. GROUND TERMINAL
27. PHONO INPUT [MM AND SC] TERMINALS
28. AUX INPUT TERMINALS
29. 4CH. TAPE MONITOR 3 TERMINALS
30. 4CH. TAPE MONITOR 2 TERMINALS
31. 4CH. TAPE MONITOR 1 TERMINALS
32. CIRCUIT PROTECTION FUSES.....Front Channel
33. 4CH. MAIN SPEAKER TERMINALS
34. 4CH. REMOTE SPEAKER TERMINALS
35. FM EXT. ANTENNA TERMINALS
36. AC OUTLET.....Switched
37. CARTRIDGE SELECTOR SWITCH (S16)
38. 30kHz COMPENSATOR SWITCH (S15)
39. 4CH. MPX OUTPUT TERMINAL
40. CIRCUIT PROTECTION FUSES.....Rear Channel
41. AM EXT. ANTENNA TERMINAL
42. AC OUTLET.....Unswitched



■ LOCATION OF CIRCUIT BOARDS



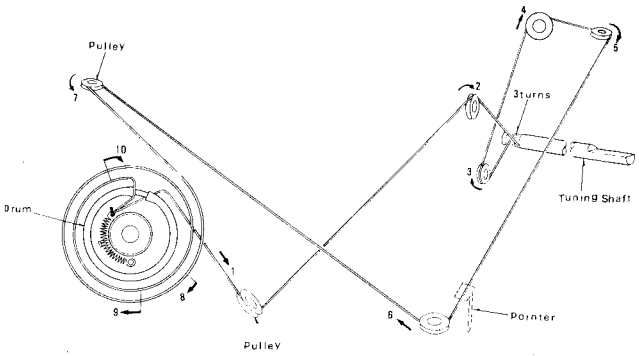
Top View



Bottom View

■ DIAL CORD INSTALLATION GUIDE

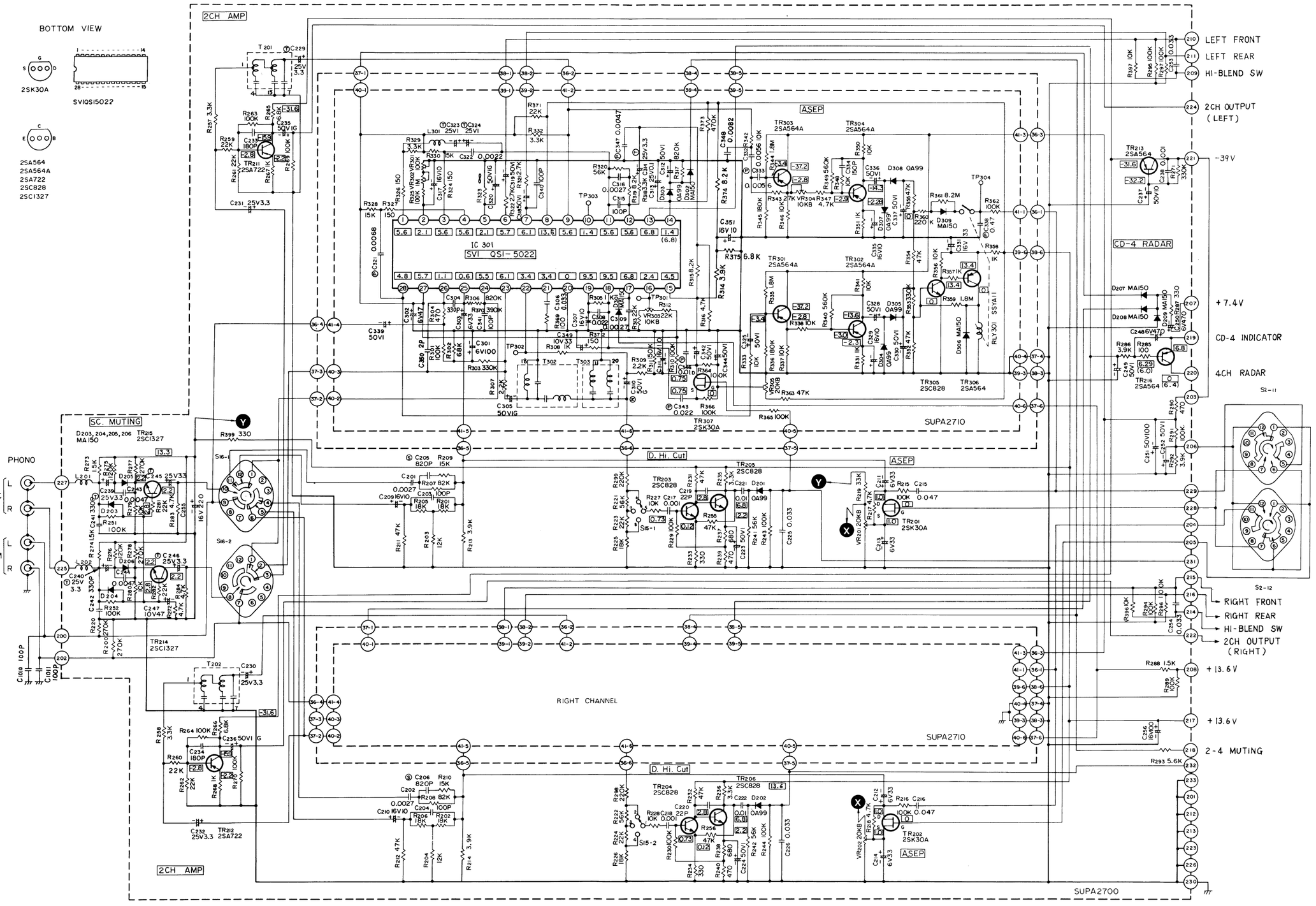
1. Dial cord length is 66-7/8" (170cm).
2. Tuning gang is positioned at maximum. capacity.
   (Frequency is minimum.)
3. Arrow marks (1~10) indicate correct order and direction of stringing dial cord.



Schematic Diagram ..... Model SA-8500X

CD-4 Demodulator

(Right ch. is same as Left ch.)



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■ TO REMOVE TUNER CIRCUIT

1. Remove four (4) cabinet mounting screws.
2. Remove cabinet from chassis.
3. Remove control knobs from front panel as shown Cabinet and Chassis Parts Location.
4. Remove six (6) front panel mounting black screws, nos. 1～6, as figure 2.
5. Remove front panel from chassis.
6. Remove ten (10) tuner circuit mounting black screws, no. 7～16, as figure 2 and 3.
7. Then tuner circuit can be moved in front of chassis as figure 1, and remove tuner circuit from chassis.

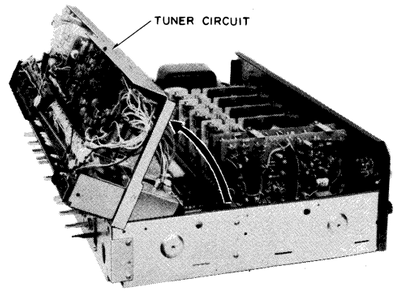


Fig. 1

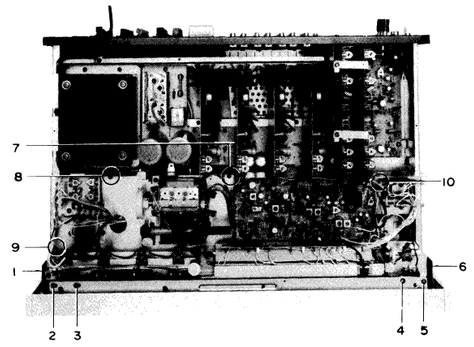


Fig. 2

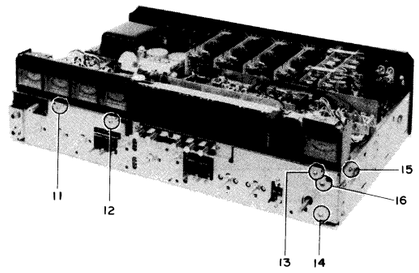


Fig. 3

■ SERVICE AID

How to install and remove the connection socket

1. Insert the lead wire into the lead wire pin clamp. (See fig. 1-①)
2. Bend the tabs of the lead wire pin clamp using radio pliers to attach the lead wire. (See fig. 1-② and ③)
3. Insert the lead wire pin clamp, to which the lead wire has been attached, into the connection socket. (See fig. 2)
4. In order to remove the lead wire pin clamp from the connection socket, insert a eyeleteer into the socket hole and touch it to the lead wire pin clamp stop. (See fig. 3-①)
5. Bend the stop inward toward the lead wire pin clamp and pull out the lead wire pin clamp. (See fig. 3-②)

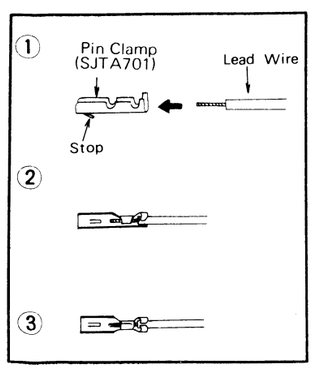


Fig. 1

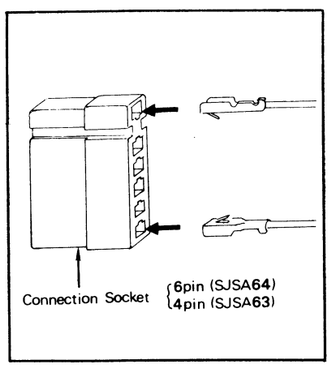


Fig. 2

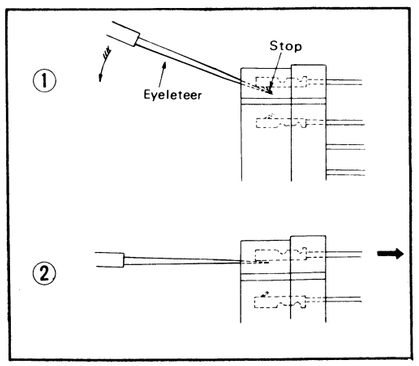
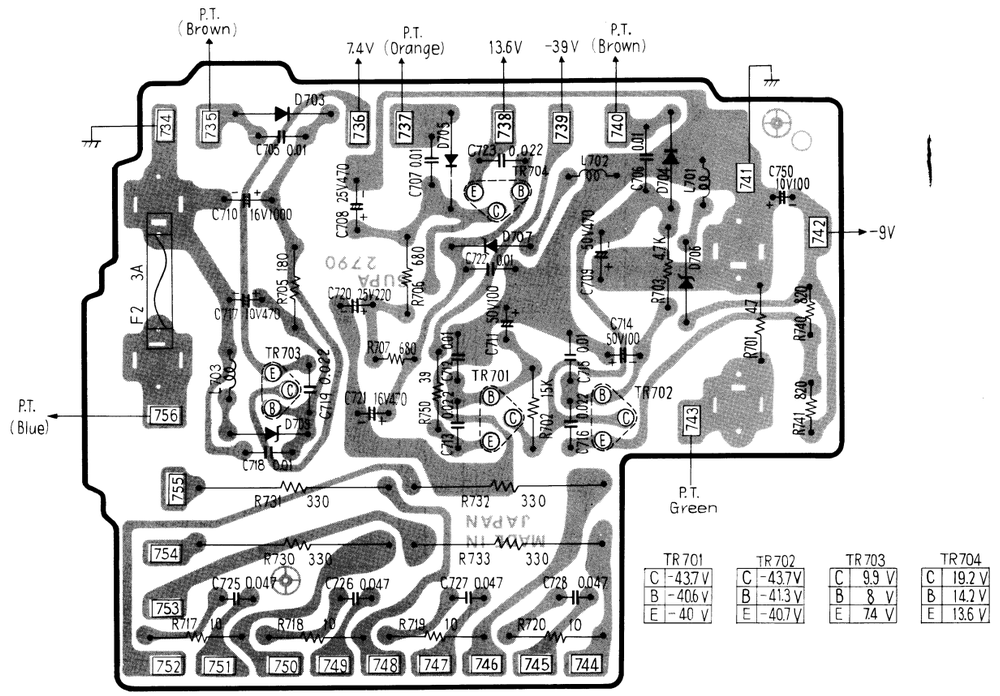
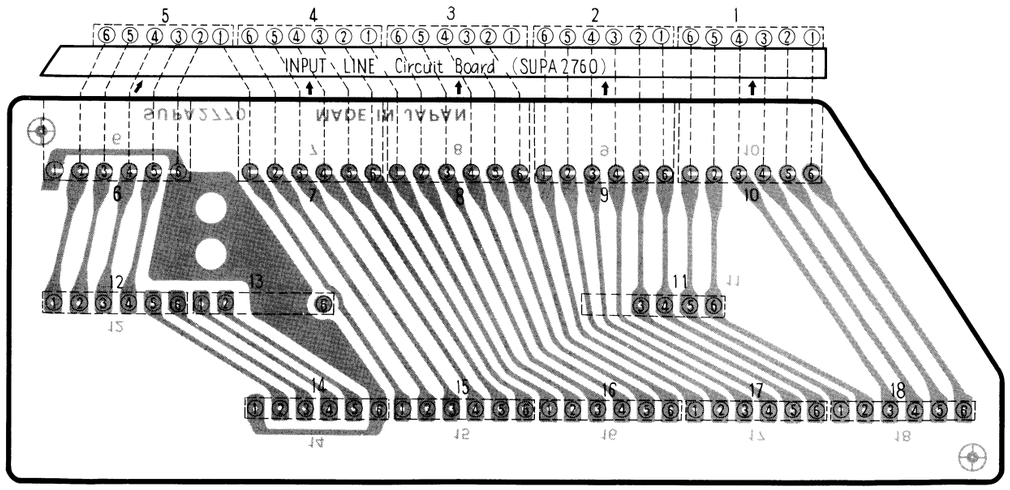


Fig. 3

POWER SOURCE Circuit Board

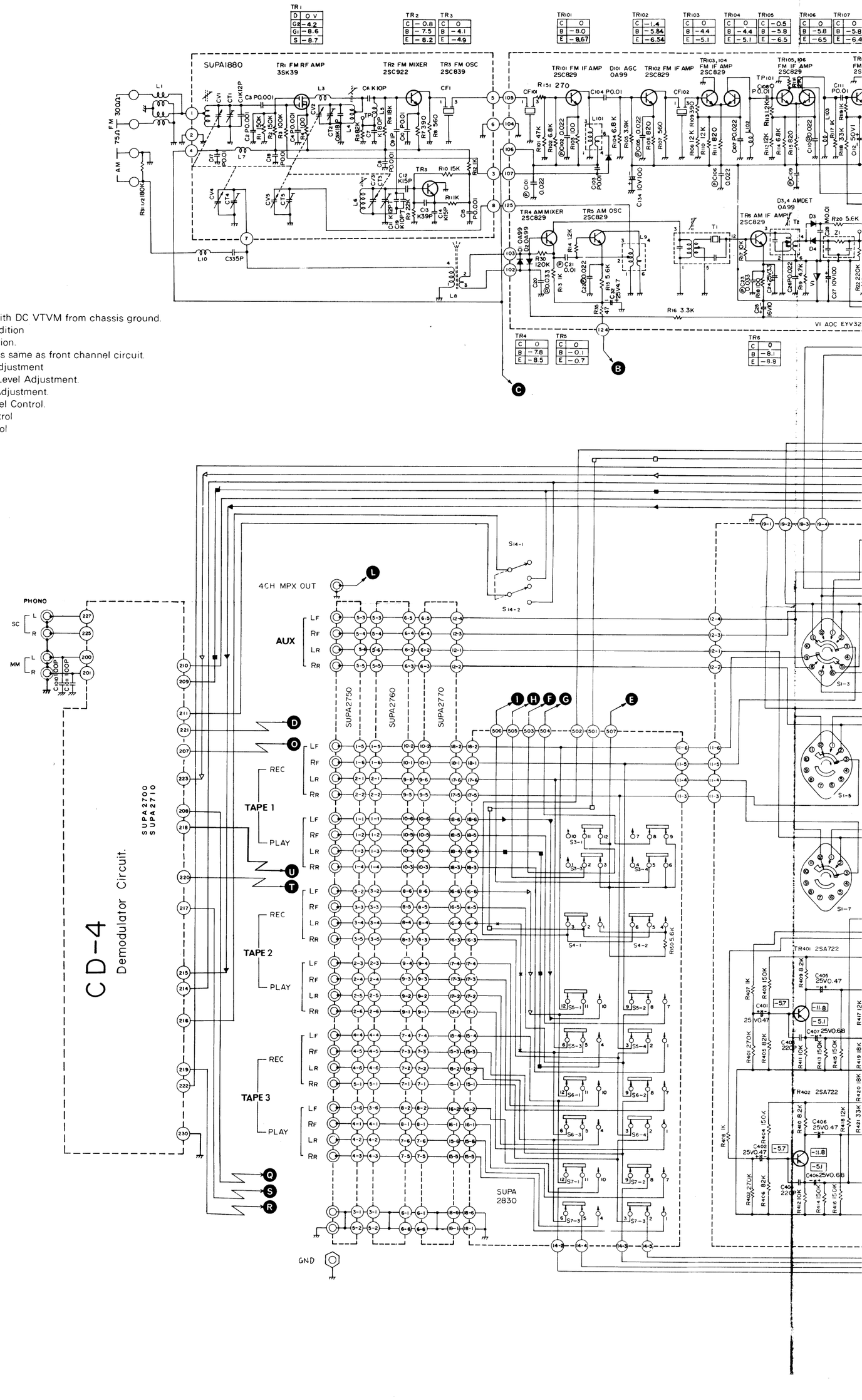


INPUT LINE CONNECTION Circuit Board



Schematic Diagram ..... Model SA-8500X

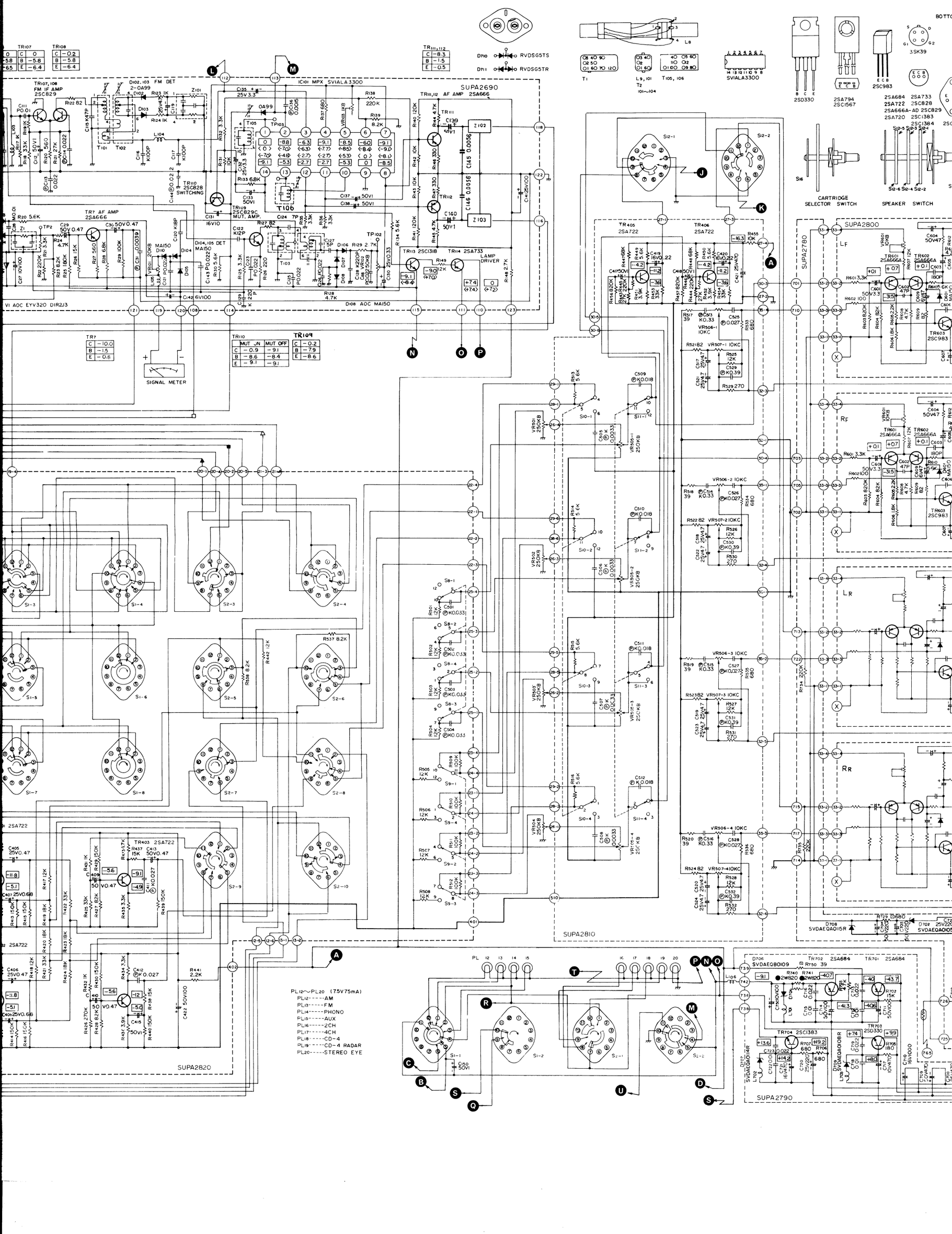
(This schematic diagram may be modified at any time with the develo

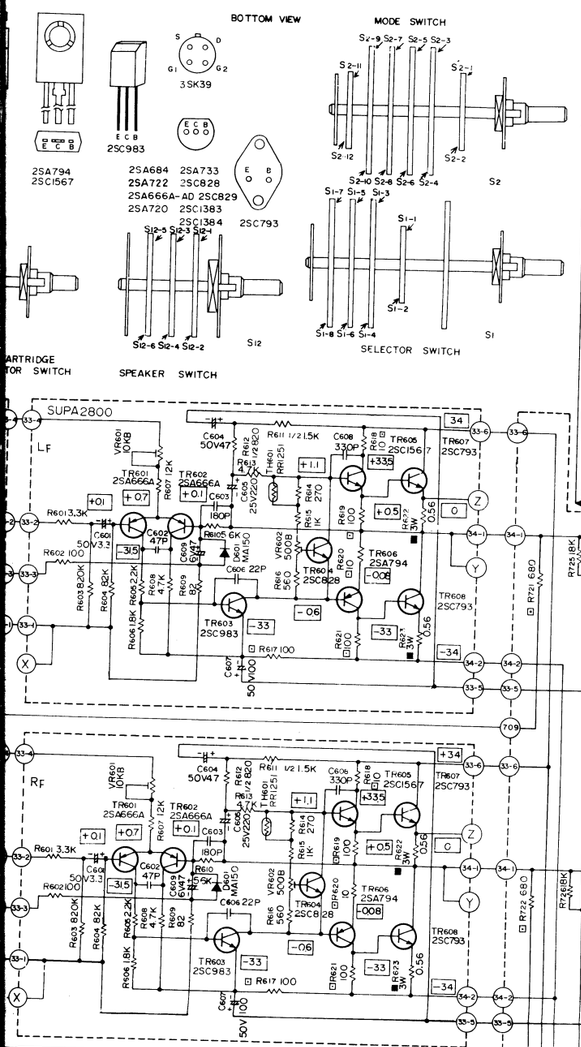


Notes 1 :

1. DC voltage measurements are taken with DC VTVM from chassis ground.
   - ▭ ..... FM/AM non-signal condition
   - 〈 〉 ..... FM stereo signal reception.
2. Circuit of rear channel main amplifier is same as front channel circuit.
3. VR101 ..... FM Meter Adjustment
4. VR102 ..... FM Muting Level Adjustment.
5. VR103 ..... Separation Adjustment.
6. VR501～VR504 ..... Channel Level Control.
7. VR505-1～VR505-4..... Volume Control
8. VR506-1～VR506-4..... Treble Control
9. VR507-1～VR507-4..... Bass Control

he development of new technology.)





Notes 2 :

- **S1-1 ~ S1-8 :** Selector switch in "**AM**" position.
  AM ↔ FM AUTO ↔ PHONO ↔ AUX
- **S2-1 ~ S2-10 :** Mode switch in "**MONO**" position.
  MONO ↔ STEREO ↔ CD-4 ↔ RM 1 ↔ RM 2
- **S3-1 ~ S3-4 :** VU meter range switch in "**OFF (0dB)**" position. OFF ↔ −10dB
- **S4-1, S4-2 :** FM muting switch in "**ON**" position.
- **S5-1 ~ S5-4 :** Tape 1 monitor switch in "**SOURCE**" position.
- **S6-1 ~ S6-4 :** Tape 2 monitor switch in "**SOURCE**" position.
- **S7-1 ~ S7-4 :** Tape 3 monitor switch in "**SOURCE**" position.
- **S8-1 ~ S8-4 :** Loudness switch in "**OFF**" position.
- **S9-1 ~ S9-4 :** Audio muting switch in "**OFF**" position.
- **S10-1 ~ S10-4 :** High Filter switch in "**OFF**" position.
- **S11-1 ~ S11-4 :** Low filter switch in "**OFF**" position.
- **S12-1 ~ S12-6 :** Speakers switch in "**OFF**" position.
  OFF ↔ MAIN ↔ REMOTE ↔ MAIN + REMOTE ↔ 2CH BTL (MAIN)
- **S13-1, S13-2 :** Power source switch in "**OFF**" position.
- **S14-1, S14-2 :** CD-4 high blend switch in "**OFF**" position.
- **S15-1, S15-2 :** 30kHz compensator switch in "**DOWN**" position.
  DOWN ↔ NORMAL ↔ UP
- **S16-1, S16-2 :** Cartridge selector switch in "**MM**" position. MM ↔ SC
- **S17-1, S17-2 :** Voltage selector switch in "110V" position
  110V ↔ 120V ↔ 220V ↔ 240V

ALIGNMENT INSTRUCTIONS----READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Notes :

1. Volume control ..... Minimum (Main Amp Alignment)
   Variable (VU Meter Alignment)
2. Speakers switch..... Main
3. Selector switch ..... Aux
4. Mode switch ..... 4ch. Discrete
5. VU meter switch ..... Normal (OFF)
6. Maintain line voltage at rated voltage.
7. The I_{CQ} adjustment should be started 1~3 minutes after setting the power switch to the ON position.
8. Before adjusting, I_{CQ} adjusting volumes ($VR_{602} \times 4$) should be turned to the left side completely.
9. Adjust all channel (Left-Front, Left-Rear, Right-Front and Right-Rear) by following adjustment method.

MAIN AMPLIFIER ALIGNMENT

	CIRCUIT	DC VTVM CONNECTION	ADJUSTMENT POINTS	REMARKS
1	DC Unbalance	Connect DC VTVM between TEST POINT Ⓧ and TEST POINT Ⓨ	VR601	Make sure that DC VTVM becomes 0mV
2	I_{CQ}	Connect DC VTVM between TEST POINT Ⓨ and TEST POINT Ⓩ	VR602	Make adjustment so that the indication on DC VTVM becomes 4mV.

VU METER ALIGNMENT

	INPUT	OUTPUT	ADJUSTMENT POINTS	REMARKS
3	Connect oscillator and VTVM to AUX terminal of set rear panel. (Input 300mV 1kHz)	Connect VTVM to speaker terminals. Output level ... 16V, 8Ω	VR51 (L-Front) VR52 (R-Front) VR53 (L-Rear) VR54 (R-Rear)	Make adjustments so that the indication on VU meter of set becomes 0dB.

Notes :

1. Volume control ..... Maximum (AM-RF)
   Minimum (AM-IF, FM-IF)
   Variable (FM-RF)
2. Bass and treble control ..... Center
3. Selector switch ..... AM
   FM-Auto (FM-RF, FM-IF)
4. Loudness switch ..... OFF
5. Muting switch ..... OFF
6. Speakers switch..... Main
7. Tape-monitor switch ..... Source
8. Mode switch ..... Stereo
9. Maintain line voltage at rated voltage.
10. Output of signal generator should be no higher than necessary to obtain an output reading.

	SIGNAL GENERATOR or SWEEP GENERATOR CONNECTION	SIGNAL GENERATOR or SWEEP GENERATOR FREQUENCY	RECEIVER DIAL SETTING [DISTANCE]	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
AM ALIGNMENT						
4	High side through 0.001μF to antenna terminal, Common to chassis.	455kHz (20kHz Sweep)	Point of non-interference	Connect vert. amp. of scope to **TP**2.	T1 (1st IFT) T2 (2nd IFT)	Adjust for maximum output.
5	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550kHz (30% Mod. with 400Hz)	550kHz [5.5mm (3/16")]	Connect meter to speakers terminal of set.	L9 (OSC Coil) L201 (ANT Coil)	Adjust for maximum output. Adjust L201 by moving coil bobbin along ferrite core.
6	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500kHz (30% Mod. with 400Hz)	1500kHz [157.2mm (6 3/16")]	Connect meter to speakers terminal of set.	CT5 (OSC Trimmer) CT4 (ANT Trimmer)	Adjust for maximum output. Repeat steps (5) and (6)
FM-IF ALIGNMENT						
7			Point of non-interference.	Connect DC VTVM between **TP**104 and **TP**105.	T102 (FM DISCRI IFT) (S)	Make sure that VTVM becomes 0V.
8	High side through 0.001μF to **TP**1. Common to chassis.	10.7MHz (400kHz Sweep)	Point of non-interference.	Connect vert. amp. of scope through detector to **TP**101. Refer to figure 1.		Confirm center frequency.
9	High side through 0.001μF to **TP**1. Common to chassis.	10.7MHz (400kHz Sweep)	Point of non-interference.	Connect vert. amp. of scope to **TP**102.	T103 (Muting IFT) (P) T104 (Muting IFT) (S)	Adjust for maximum sharp and proper linearity. Adjust to center frequency as step (8) Refer to figure 2.
FM-RF ALIGNMENT						
10	Connect to FM antenna terminal through FM dummy antenna. (Refer to fig 3)	90MHz (100% Mod. with 400Hz)	90MHz [20.7mm (13/32")]	Output meter across speaker terminals.	L6 (FM OSC Coil) * L4 (FM DET Coil) L2 (FM ANT Coil)	Adjust for maximum output.
11	Connect to FM antenna terminal through FM dummy antenna. (Refer to fig. 3)	106MHz (100% Mod. with 400Hz)	106MHz [147.2mm (5 25/32")]	Output meter across speaker terminals.	CT3 (FM OSC Trimmer) CT2 (FM DET Trimmer) CT1 (FM ANT Trimmer)	Adjust for maximum output. Repeat steps (10) and (11)

* Use six cornered alignment tool for aligning FM OSC coil (L6)

	SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	INDICATOR (DISTORTION METER and SIGNAL METER)	ADJUSTMENT POINTS	REMARKS
MUTING LEVEL ALIGNMENT						
	Note : Muting switch.....ON					
12	Connect to FM antenna terminal through FM dummy antenna.	98MHz (100% Mod. with 400Hz) Output 28dB (IHF)	98MHz (Input Level 16dB)	Output meter or speaker across speaker terminals.	VR102 (Muting Level)	Adjust so that output can be obtained.
FM-MONO DISTORTION ALIGNMENT						
	Note : Muting switch ..... OFF					
13	Connect to FM antenna terminal through FM dummy antenna.	98MHz (100% Mod. with 400Hz) Output 72dB	98MHz	Connect distortion meter to speaker terminals.	T101 (FM DISCRI IFT) (P)	Adjust for minimum distortion.
SIGNAL METER ALIGNMENT						
14	Connect to FM antenna terminal through FM dummy antenna.	98MHz (30% Mod. with 400Hz) Output 72dB	98MHz	Signal meter of set.	VR101 (Indicated Position)	Adjust for about 4.8 point of signal meter indication.

Notes :

Stereo-modulator ..... Connect stereo-modulator output to EXT. MOD. terminal of signal generator. Internal OSC 1kHz. Pilot signal modulation 10%.

Signal generator ..... Frequency approximately 98MHz. Output level 72dB. Modulation mode to FM.

1. Selector ..... FM-Auto
2. Bass and treble control ..... Center
3. Speakers switch ..... Main
4. Mode switch ..... Stereo
5. Maintain line voltage at rated voltage.
6. Muting switch ..... OFF
7. Loudness switch..... OFF
8. Tape monitor switch..... Source
9. Dummy load 8Ω

19kHz, 38kHz COIL and PHASE ALIGNMENT

	SIGNAL GENERATOR CONNECTION	STEREO MODULATOR MODE and MOD. RATE	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
15	FM antenna terminal through dummy antenna.	Pilot signal to ON.	Connect scope to **TP**103. Common to chassis.	T105 (19kHz Coil)	Adjust for maximum output.
16	〃	〃 L (or R) 30% Mod.	Connect scope to speaker terminals.	T106 (38kHz Coil)	Adjust for minimum right (or left) output.
SEPARATION ALIGNMENT					
17	FM antenna terminal through dummy antenna.	L (and R) 30% Mod.	Output meter across speaker terminals through low pass filter. (Low Pass Filter fc=15kHz~19kHz)	VR103 (Separation)	Adjust for minimum right (and left) output.

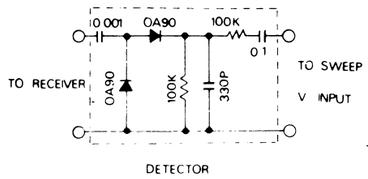


Fig. 1

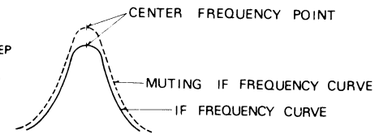
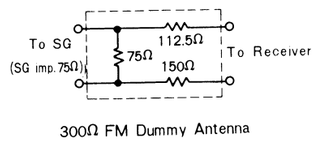


Fig. 2



300Ω FM Dummy Antenna

Fig. 3

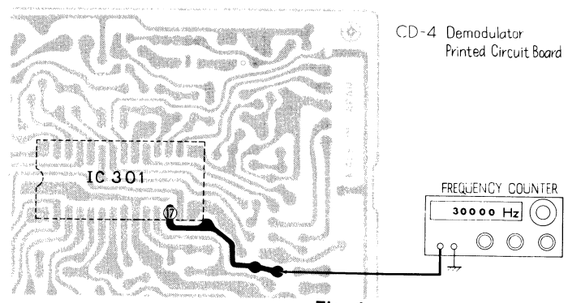


Fig. 4

CD-4 DEMODULATOR ALIGNMENT INSTRUCTIONS

Notes :
1. Volume control ..... Minimum (When separation alignment is variable)
2. Channel level control ..... Maximum
3. Selector switch ..... PHONO
4. Mode switch ..... DISCRETE (CD-4)
5. 30kHz compensator switch ..... NORMAL
6. Cartridge selector switch ..... MM
7. Other controls ..... Optional position
8. Maintain line voltage at rated voltage.
9. Adjust left channel and right channel by following adjustment method.

	AF OSCILLATOR or 4CH PLAYER CONNECTION	INPUT FREQUENCY & INPUT LEVEL	INDICATOR CONNECTION	ADJUSTMENT POINTS	REMARKS
	PLL FREE RUNNING FREQUENCY ALIGNMENT				
1			Connect frequency counter to No. **17** pin of IC301 (Refer to fig. 4)	VR303	1. **TP302** connect to chassis through electrolytic capacitor (Refer to fig 5) 2. Make adjustment so that the indication on frequency counter becomes 30kHz ±250Hz.
	AUTOMATIC NOISE REDUCTION SYSTEM (ANRS) ALIGNMENT				
2	Connect OSC to No. **15** pin of IC301 through electrolytic capacitor. (Refer to fig. 7)	600Hz (40mV)	Connect VTVM to REC OUT terminal. (left and right front rec. output)		1. **TP304** connect to chassis. (Refer to fig. 6) 2. Resistor connect between No. **14** pin of IC301 and +B voltage line. (Refer to fig. 7) 3. This output voltage is defined as the specified voltage. [about 100mV]
3	Connect OSC to No. **15** pin of IC301 through electrolytic capacitor. (Refer to fig. 7)	600Hz (4mV)	Connect VTVM to REC OUT terminal. (left and right front rec. output)	VR301 VR302	4. Adjust VR301 and VR302 until 1/30 (−30dB) the specified voltage level, which was measured at step 2 is reached.
	MAIN CHANNEL GAIN ALIGNMENT				
4	Connect OSC to PHONO (MM) terminal. (Left and Right)	600Hz (1.6mV)	Connect VTVM to REC OUT terminal. (Left and right front rec. output)	VR201 (Left) VR202 (Right)	1. **TP304** connect to chassis. (Refer to fig. 6) 2. Make adjustment so that the indication on VTVM becomes 100mV. (Left and Right)
	DYNAMIC HIGH CUT ALIGNMENT				
	Note : : Adjust when replacing transistor TR307 (2SK30A).				
5	Connect OSC to PHONO (MM) terminal. (Left and Right)	30kHz (2.2mV)	Connect circuit tester to TR307. (between Drain and Source) Refer to fig. 8.	VR305	Make adjustment so that the indication on circuit tester becomes 5kΩ.
	SEPARATION ALIGNMENT				
	Notes . 1. Cartridge selector switch ..... Semi Conductor 2. Separation alignment record ..... SPR123 (Accessory of Model SH-400) 3. Use a 4CH player and SC 4CH. cartridge. (Cartridge No. EPC-450C-II)				
6	Connect 4CH player to PHONO (SC) terminal and play CD-4 alignment record.	Separation Alignment Band (Left Side)	VU (output level) meter of set front panel.	VR304 (Left)	Adjust for minimum left rear VU meter indication.
7		Separation Alignment Band (Right Side)	VU (output level) meter of set front panel.	VR304 (Right)	Adjust for minimum right rear VU meter indication.

Note :

If you removed the CD-4 demodulator p.c.b. assembly that are used at left channel (right channel) side, please do not install it at right channel (left channel) side. Also, if you changed the CD-4 demodulator p.c.b. assembly, it becomes necessary to make re-adjustment.

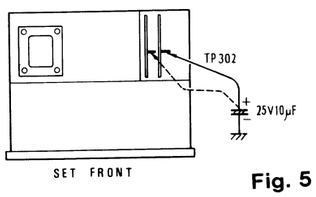


Fig. 5

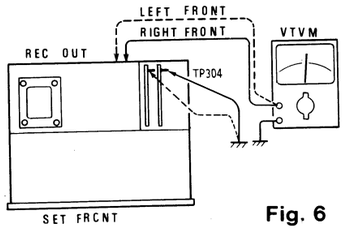


Fig. 6

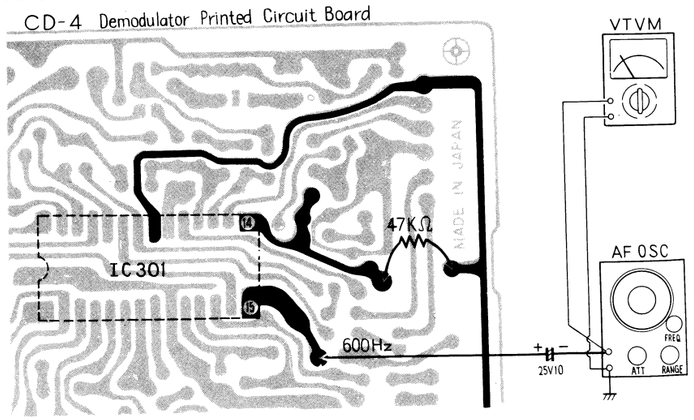


Fig. 7

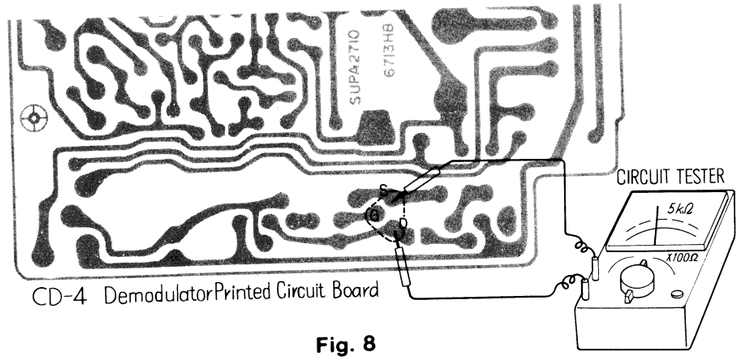
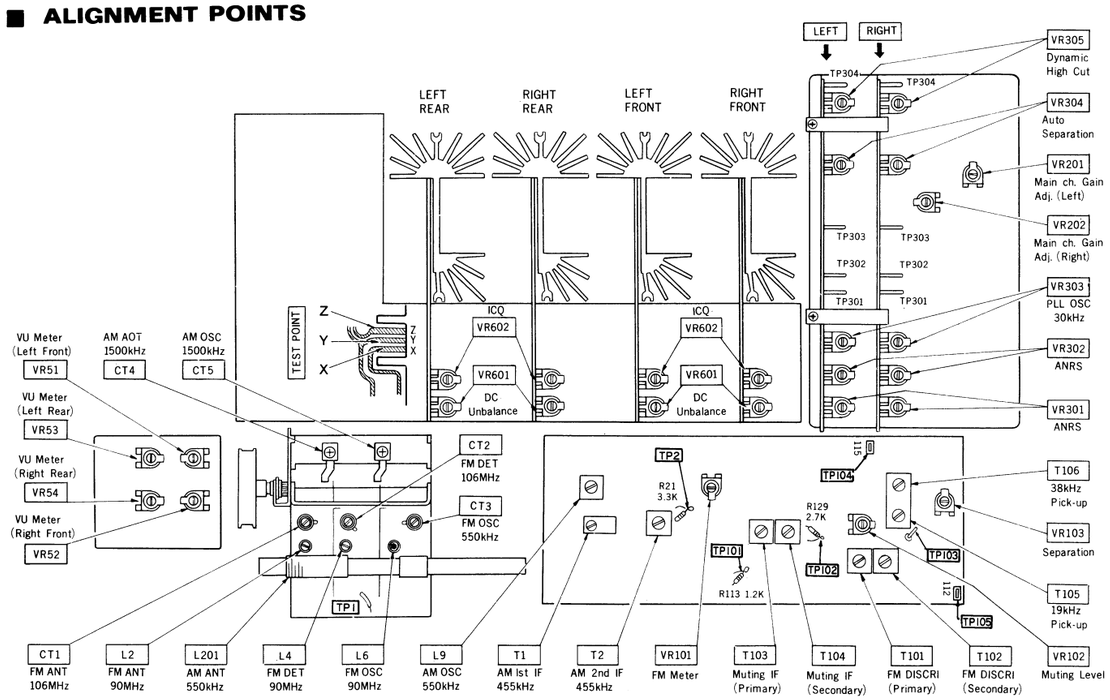


Fig. 8

■ ALIGNMENT POINTS



■ TO REMOVE IC OF CD-4 DEMODULATOR

1. Remove CD-4 demodulator p.c.b. of set.
2. Insert screw driver between IC301 and IC socket. (As shown fig. 9)
3. Turn screw driver (Left or Right side) 90 degrees. (As shown fig. 10)
4. Remove IC301 from IC socket.

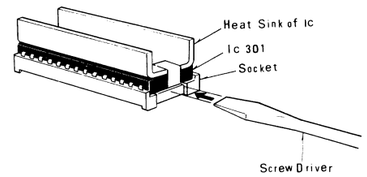


Fig. 9

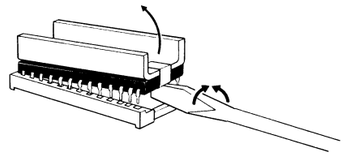
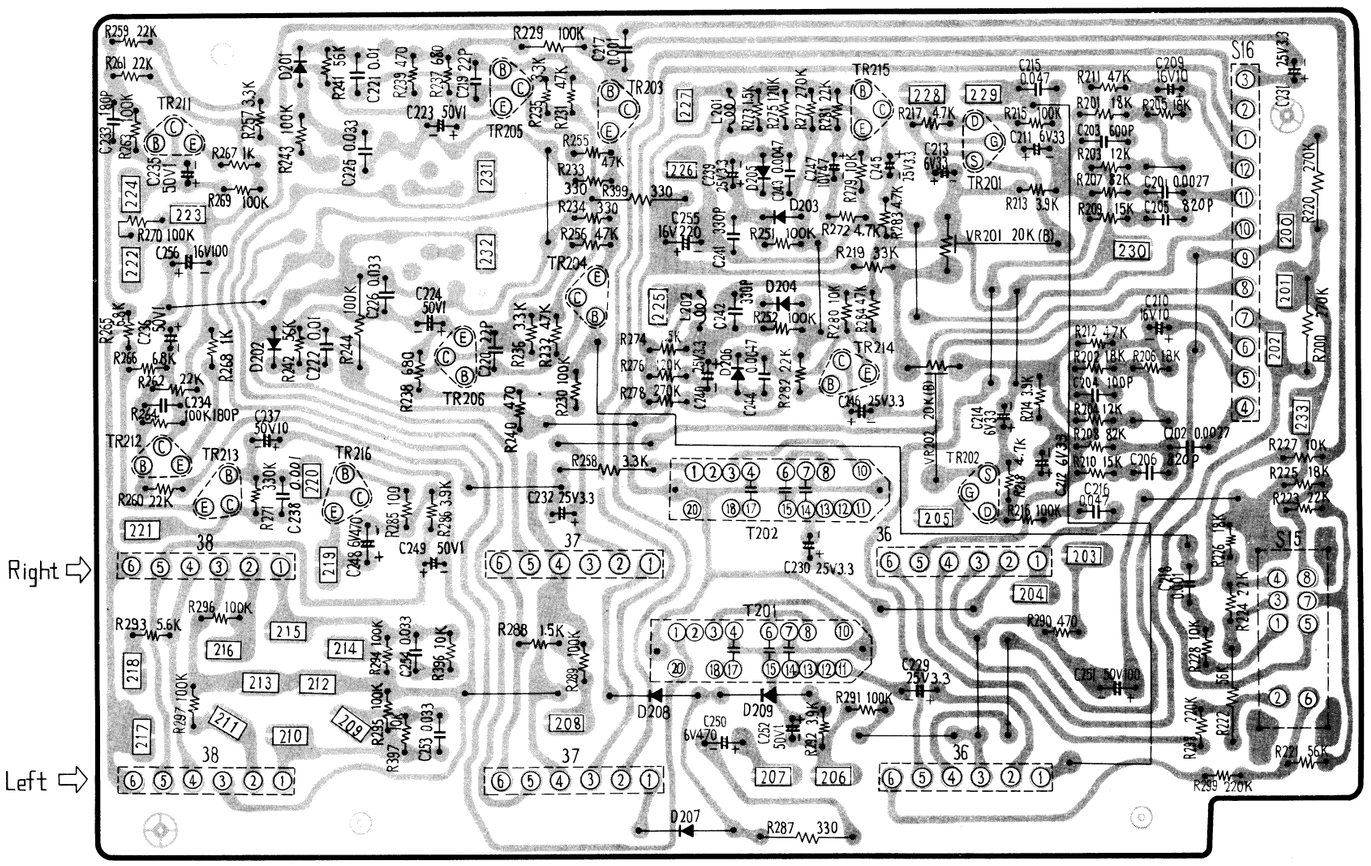


Fig. 10

CD-4 MASTER Circuit Board



TR201	Non-Sig
D	1.0 V
G	0 V
S	1.0 V

TR202	Non-Sig
D	1.0 V
G	0 V
S	1.0 V

TR203	Non-Sig
C	2.8 V
B	0.73 V
E	0.12 V

TR204	Non-Sig
C	2.8 V
B	0.73 V
E	0.12 V

TR205	Non-Sig
C	6.8 V
B	2.8 V
E	2.2 V

TR206	Non-Sig
C	6.8 V
B	2.8 V
E	2.2 V

TR211	Non-Sig
C	-15.9 V
B	-2.8 V
E	-2.2 V

TR212	Non-Sig
C	-15.9 V
B	-2.8 V
E	-2.2 V

TR213	Non-Sig
C	-40 V
B	-32.2 V
E	-31.6 V

TR214	Non-Sig
C	2.2 V
B	2.8 V
E	2.2 V

TR215	Non-Sig
C	2.2 V
B	2.8 V
E	2.2 V

TR216	Non-Sig	CD-4
C	0 V	6.4 V
B	6.29 V	6.0 V
E	6.8 V	6.8 V

CD-4 DEMODULATOR (Left or Right) Circuit Board

TR307	Non-Sig
D	0.75 V
G	0 V
S	0.75 V

TR306	Non-Sig
C	0 V
B	13.4 V
E	13.4 V

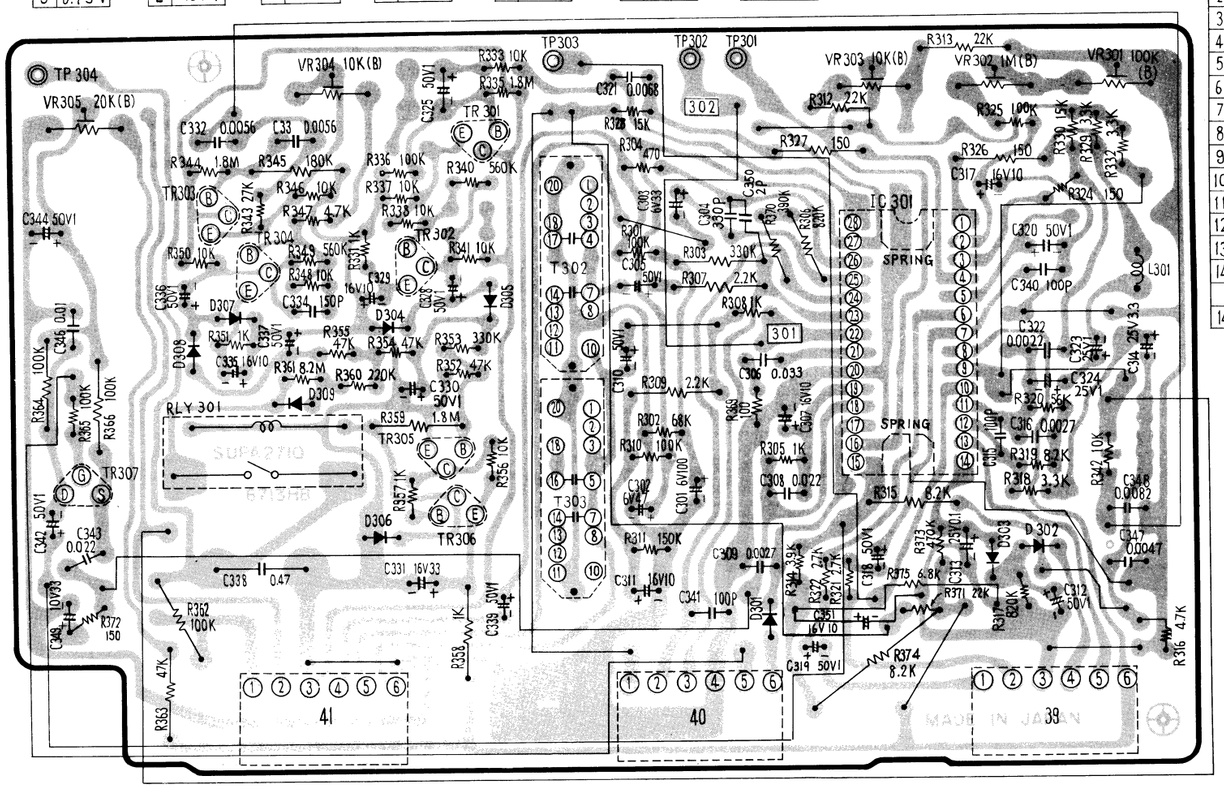
TR305	Non-Sig
C	13.4 V
B	0 V
E	0 V

TR304	Non-Sig
C	-14.3 V
B	-2.9 V
E	-2.28 V

TR303	Non-Sig
C	-37.2 V
B	-3.4 V
E	-2.8 V

TR302	Non-Sig
C	-13.6 V
B	-3 V
E	-2.3 V

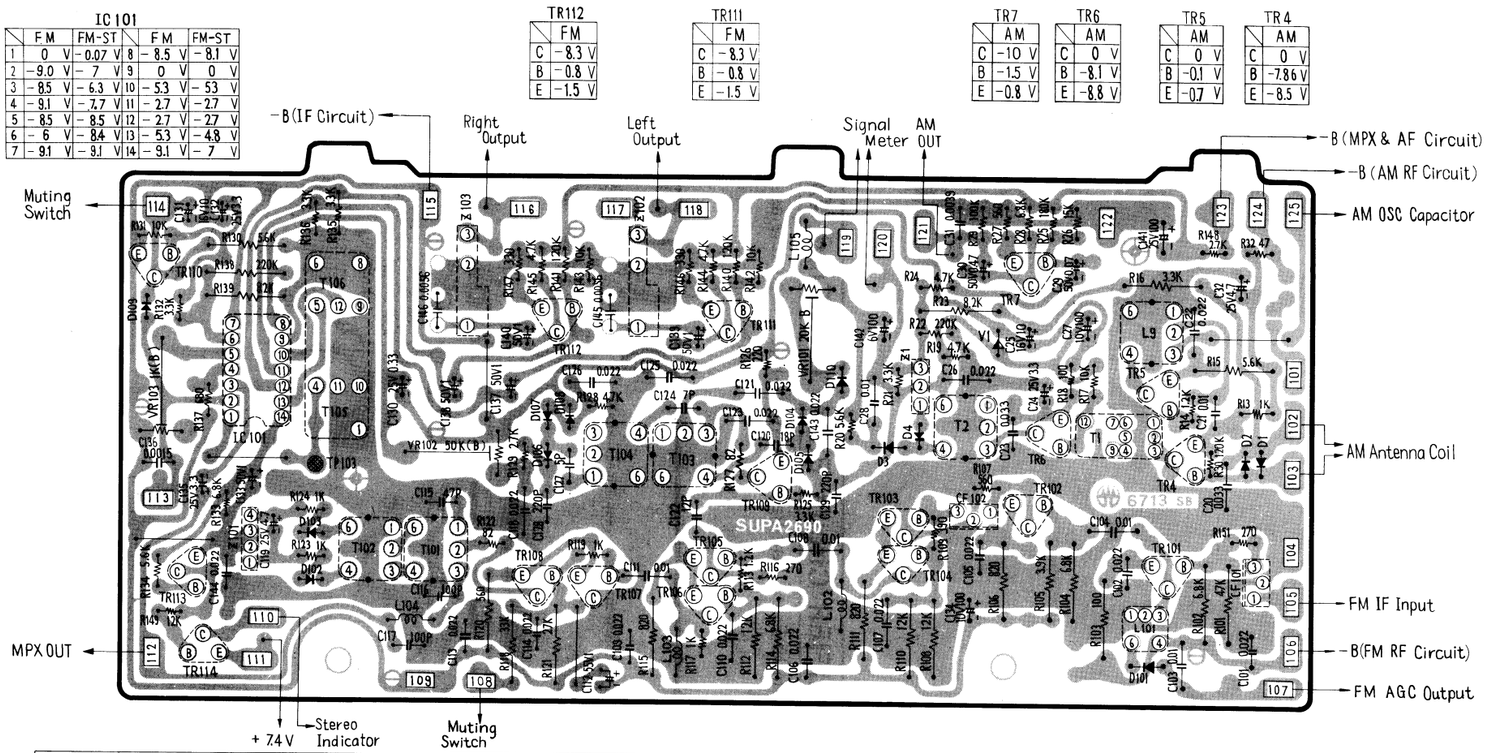
TR301	Non-Sig
C	-37.2 V
B	-3.4 V
E	-2.8 V



IC301

Non-Signal		Reception	
1	5.6 V	15	4.5 V
2	2.1 V	16	2.4 V
3	5.6 V	17	6.8 V
4	5.6 V	18	9.5 V
5	2.1 V	19	9.5 V
6	5.7 V	20	0 V
7	6.1 V	21	3.4 V
8	13.1 V	22	3.4 V
9	5.6 V	23	6.1 V
10	1.4 V	24	5.5 V
11	5.6 V	25	0.6 V
12	5.6 V	26	1.1 V
13	6.8 V	27	5.7 V
14	1.4 V	28	4.8 V
CD-4			
14	6.8 V		

AM/FM-IF & FM MPX Circuit Board



IC101	FM	FM-ST		FM	FM-ST
1	0 V	-0.07 V	8	-8.5 V	-8.1 V
2	-9.0 V	-7 V	9	0 V	0 V
3	-8.5 V	-6.3 V	10	-5.3 V	-5.3 V
4	-9.1 V	-7.7 V	11	-2.7 V	-2.7 V
5	-8.5 V	-8.5 V	12	-2.7 V	-2.7 V
6	-6 V	-8.4 V	13	-5.3 V	-4.8 V
7	-9.1 V	-9.1 V	14	-9.1 V	-7 V

TR112	FM
C	-8.3 V
B	-0.8 V
E	-1.5 V

TR111	FM
C	-8.3 V
B	-0.8 V
E	-1.5 V

TR7	AM
C	-10 V
B	-1.5 V
E	-0.8 V

TR6	AM
C	0 V
B	-8.1 V
E	-8.8 V

TR5	AM
C	0 V
B	-0.1 V
E	-0.7 V

TR4	AM
C	0 V
B	-7.86 V
E	-8.5 V

TR & IC	TR110 TR113 TR114 IC101	TR108 TR112 TR107	TR105 TR106 TR111 TR109	TR103 TR104	TR7 TR102 TR6	TR5 TR4 TR101	
D & V	D109	D102 D103	D106 D107 D108	D104 D105 D110 D3 D4	V1	D101	D2 D1
T & L	T105 T106 T102 T101 L104	T104 T103 L103	L102 T2	T1 L101 L9			

TR110	FM	MUTING OFF
C	-0.9 V	-9.0 V
B	-8.6 V	-8.4 V
E	-9.0 V	-9.1 V

TR113	FM	FM-ST
C	-9 V	-7 V
B	-9.1 V	-8.4 V
E	-9 V	-9 V

TR114	FM	FM-ST
C	0 V	7.2 V
B	7.1 V	6.7 V
E	7.4 V	7.4 V

TR108	FM
C	-0.2 V
B	-5.8 V
E	-6.4 V

TR107	FM
C	0 V
B	-5.8 V
E	-6.4 V

TR106	FM
C	-0.3 V
B	-5.8 V
E	-6.5 V

TR105	FM
C	-0.3 V
B	-5.8 V
E	-6.5 V

TR109	FM
C	-0.2 V
B	-7.9 V
E	-8.6 V

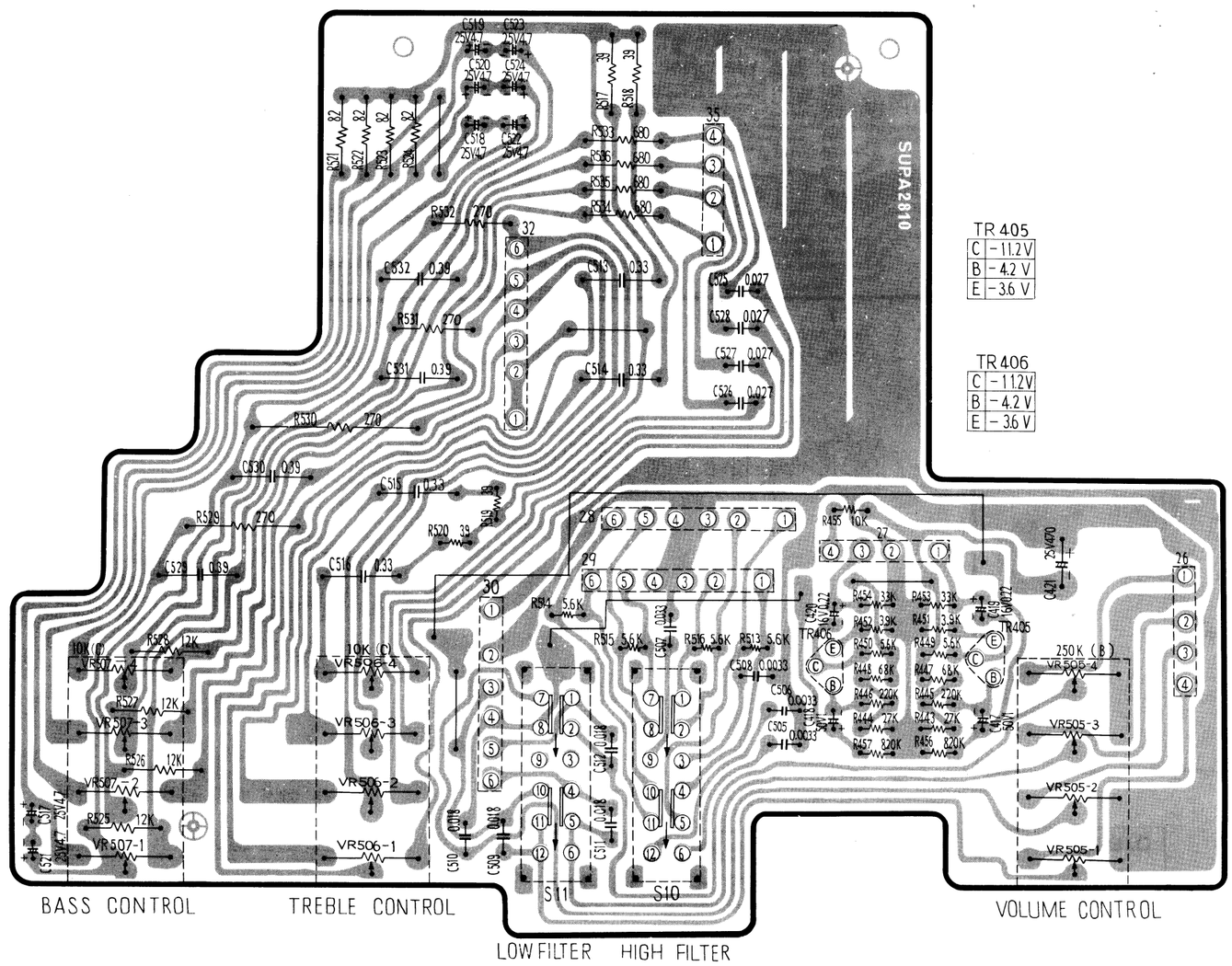
TR103	FM
C	0 V
B	-4.4 V
E	-5.1 V

TR104	FM
C	0 V
B	-4.4 V
E	-5.1 V

TR102	FM
C	-1.74 V
B	-5.84 V
E	-6.54 V

TR101	FM
C	0 V
B	-8 V
E	-8.67 V

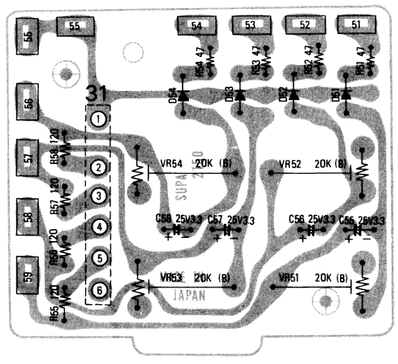
VOLUME, TONE CONTROL & PHASE INVERTER Circuit Board



TR405	
C	-11.2 V
B	-4.2 V
E	-3.6 V

TR406	
C	-11.2 V
B	-4.2 V
E	-3.6 V

VU METER Circuit Board



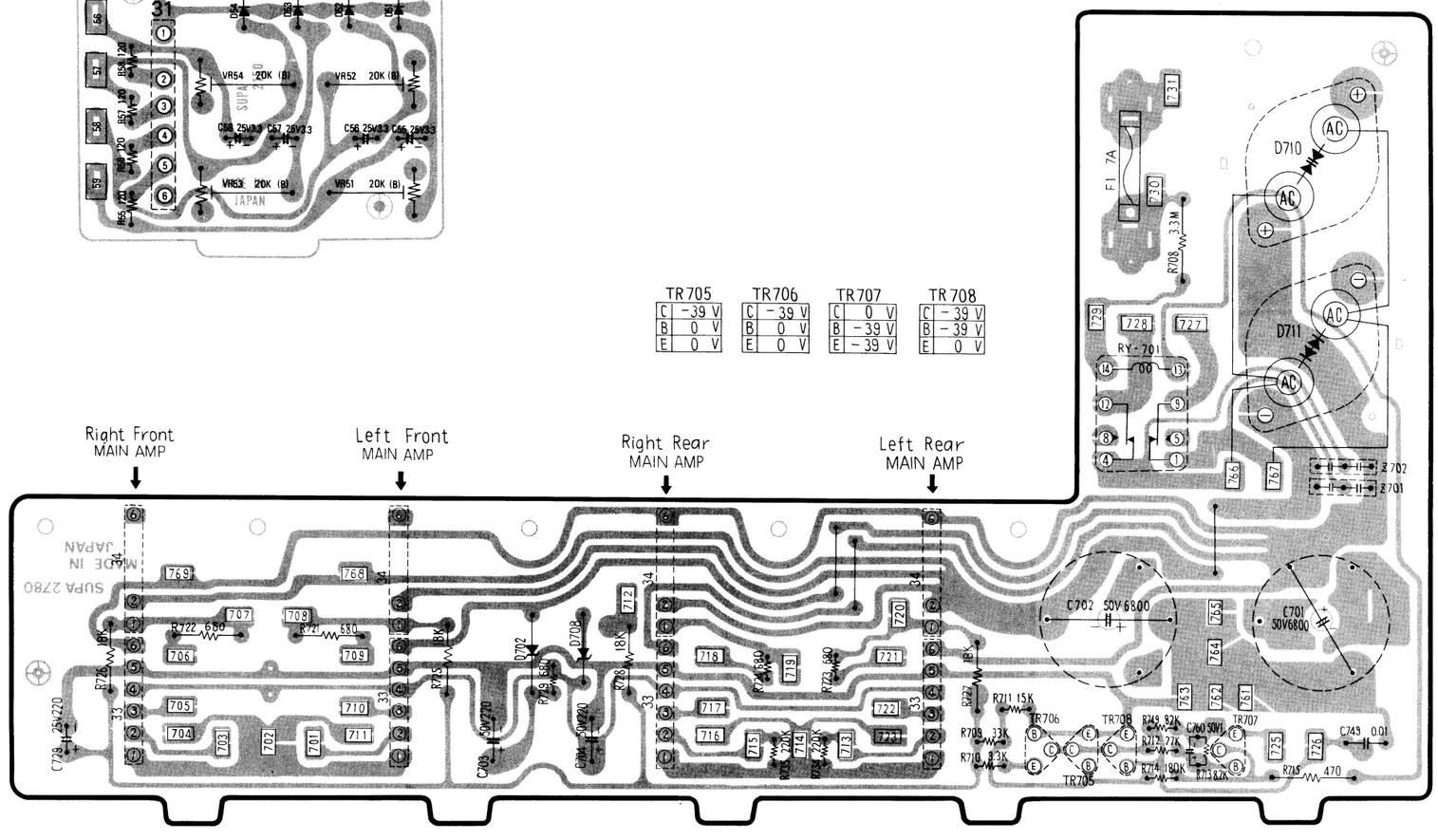
AF POWER SOURCE & SPEAKERS PROTECTION Circuit Board

TR705	
C	-39 V
B	0 V
E	0 V

TR706	
C	-39 V
B	0 V
E	0 V

TR707	
C	0 V
B	-39 V
E	-39 V

TR708	
C	-39 V
B	-39 V
E	0 V

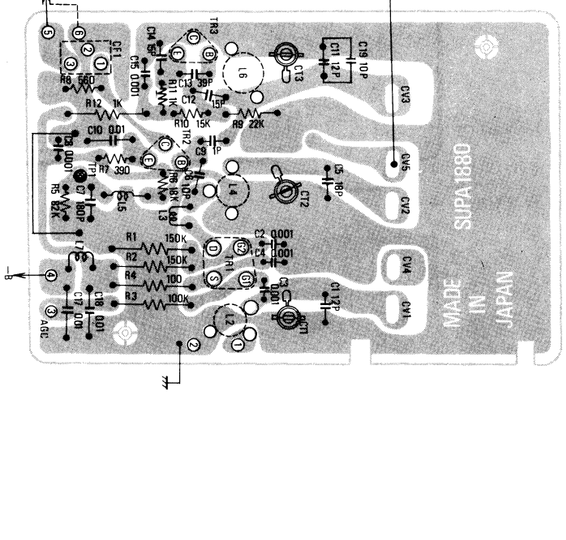


FM-RF Circuit Board

TR1	FM
D	0 V
G1	-8.6 V
G2	-4.2 V
S	-8.2 V

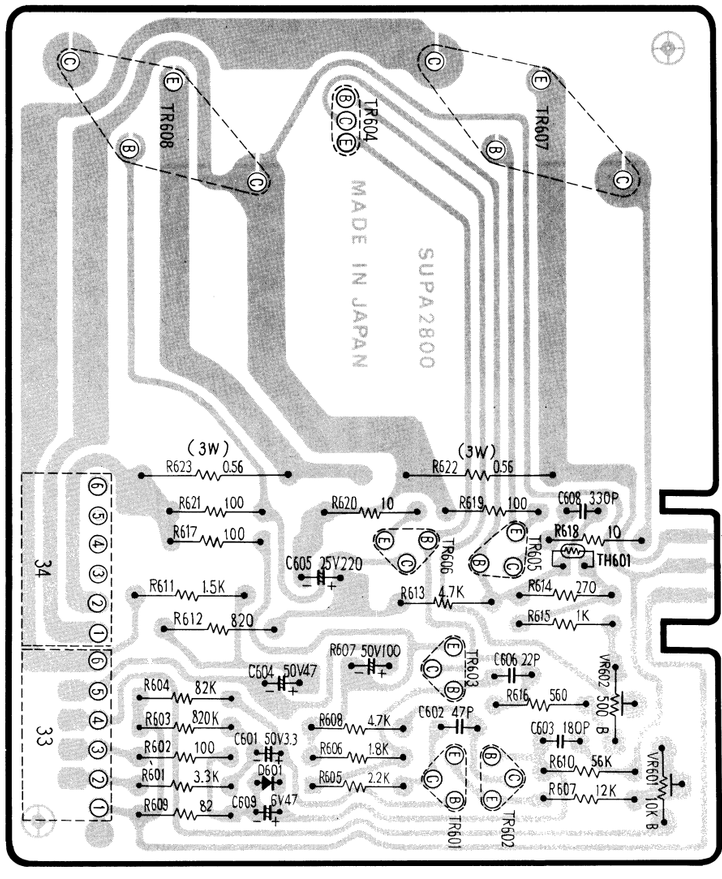
TR2	FM
C	-0.8 V
B	-7.5 V
E	-8.2 V

TR3	FM
C	0 V
B	-4.3 V
E	-4.9 V



MAIN AMPLIFIER Circuit Board (Left-Front Channel)

Other channels (Right-Front, Left-Rear and Right-Rear) are same as Left-Front channel.



TR607	
C	34 V
B	0.5 V
E	0 V

TR604	
C	1.1 V
B	0 V
E	-0.6 V

TR608	
C	0 V
B	-33 V
E	-33.7V

TR601	
C	-31.5V
B	0.1 V
E	0.7V

TR602	
C	-31.5V
B	0.1 V
E	0.7 V

TR603	
C	-0.6V
B	-32.3V
E	-33V

TR605	
C	33.5
B	1.1
E	0.5

TR606	
C	-33 V
B	-0.6 V
E	-0.08V

SELECTOR/MODE SWITCH & 4CH MATRIX Circuit Board

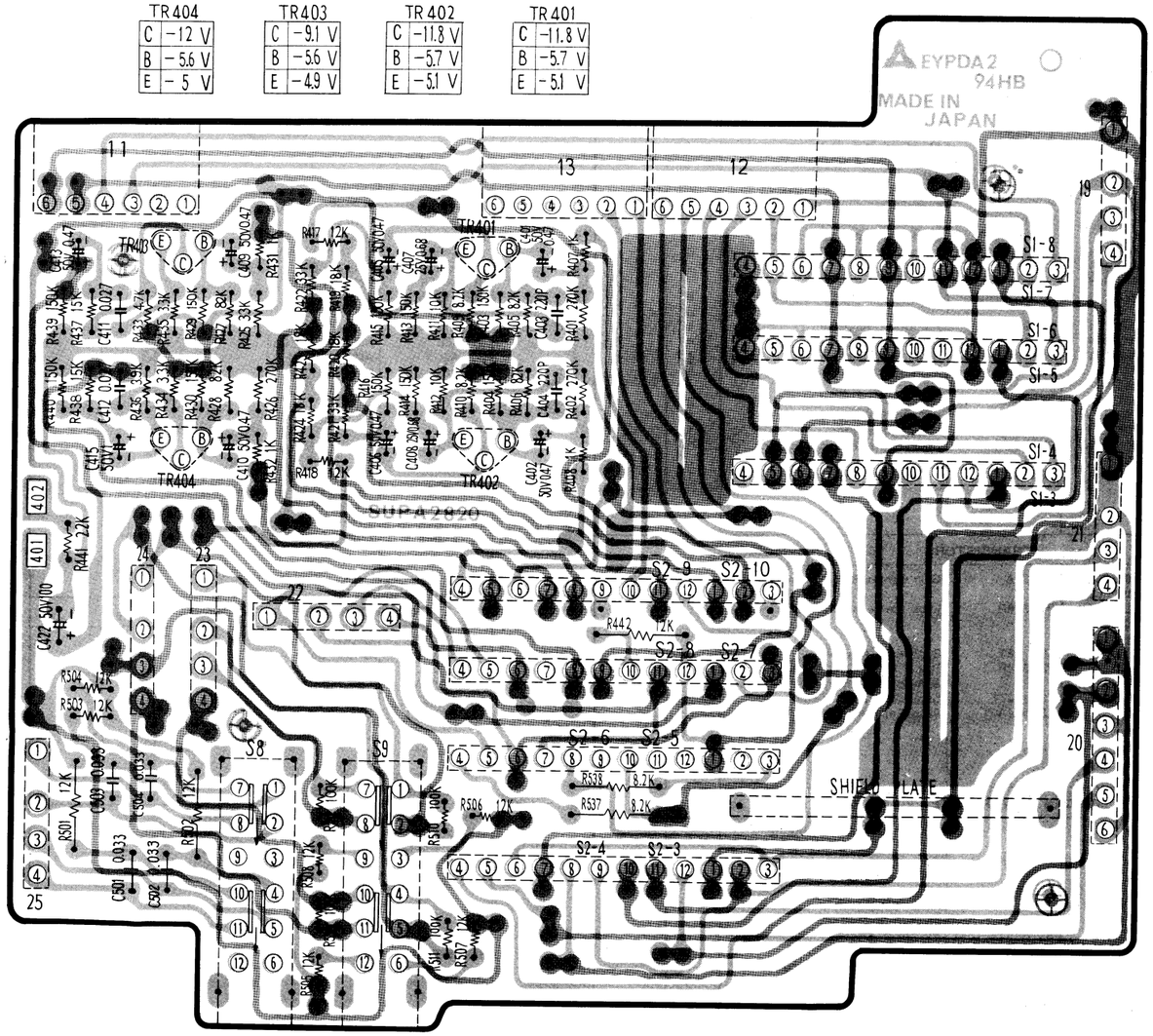
Circuit View on Top of p.c.b. Circuit View on Bottom of p.c.b.

TR404	
C	−12 V
B	−5.6 V
E	−5 V

TR403	
C	−9.1 V
B	−5.6 V
E	−4.9 V

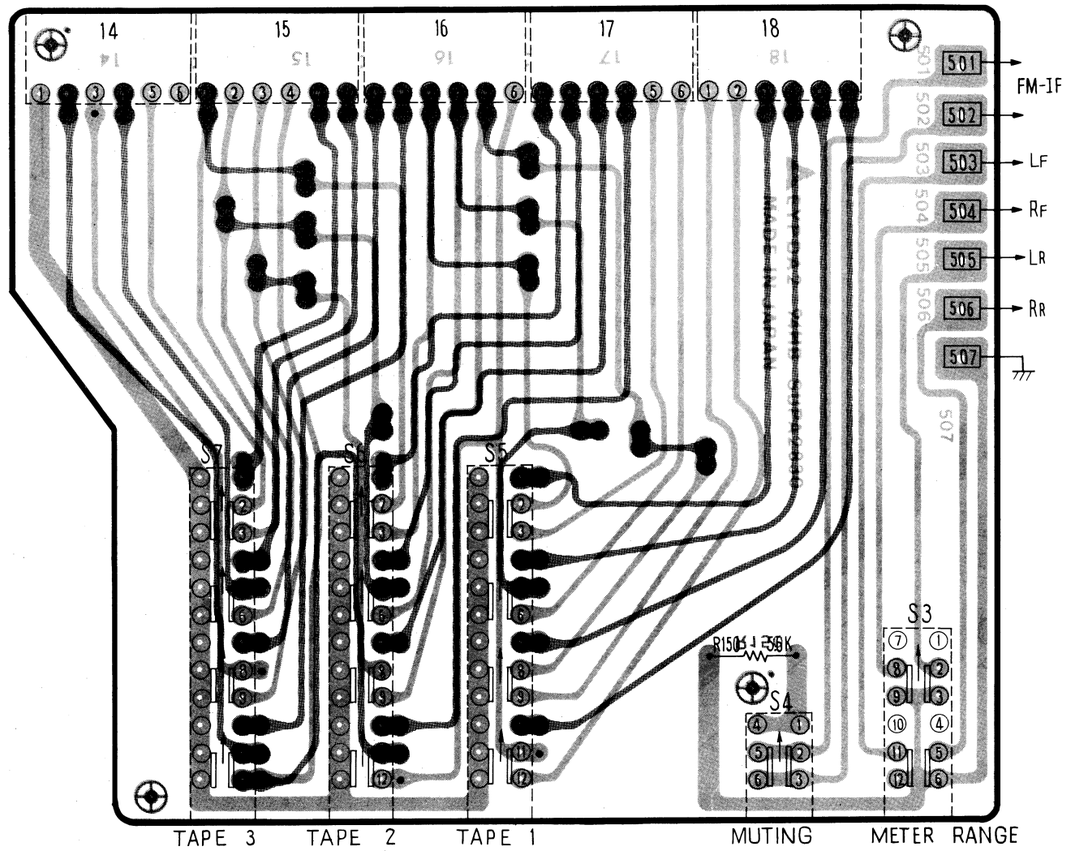
TR402	
C	−11.8 V
B	−5.7 V
E	−5.1 V

TR401	
C	−11.8 V
B	−5.7 V
E	−5.1 V

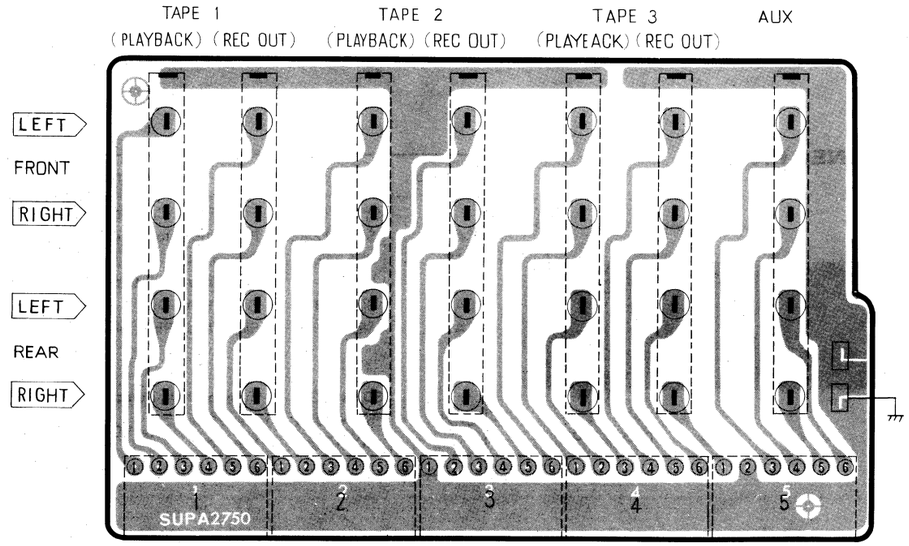


LOUDNESS (S8) | AUDIO MUTING (S9) | MODE SWITCH (S2) | SELECTOR SWITCH (S1)

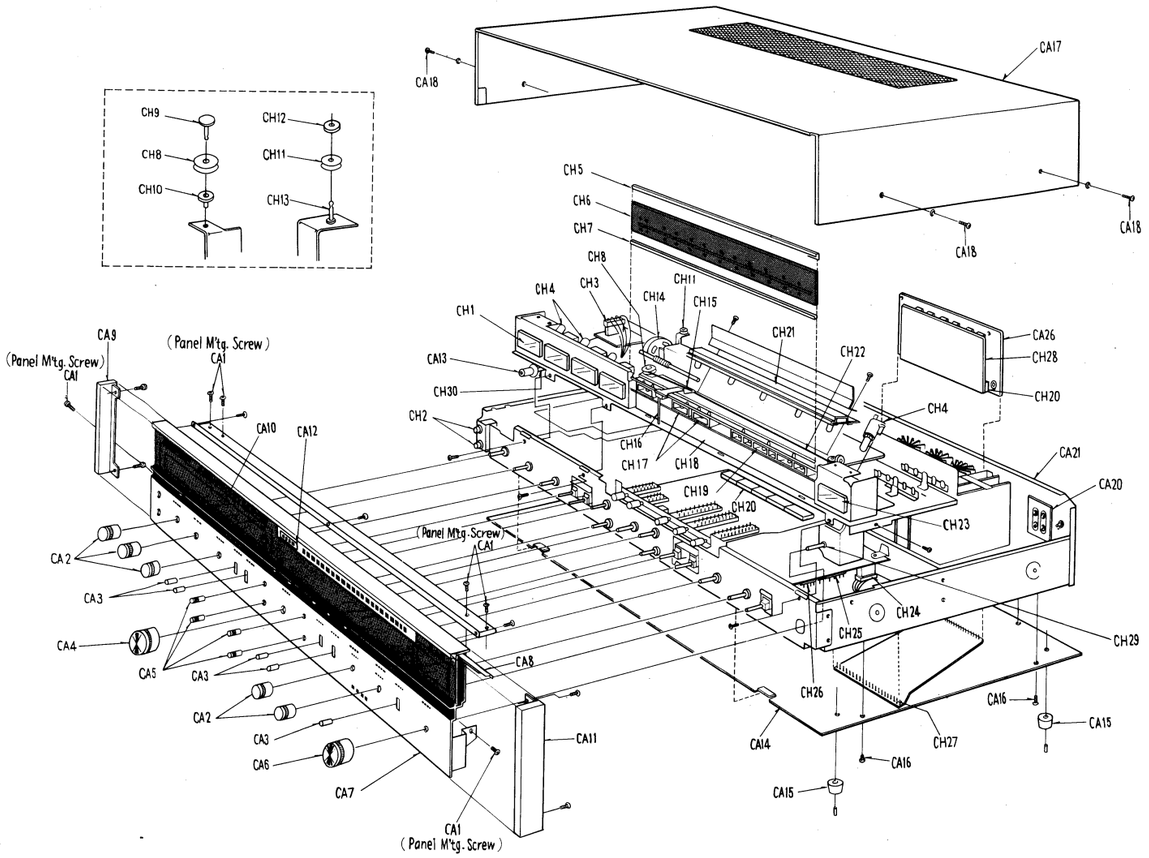
TAPE MONITOR SWITCH Circuit Board



INPUT TERMINAL Circuit Board

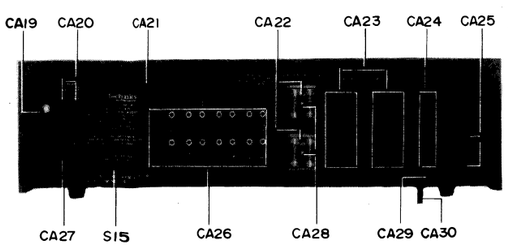


■ CABINET & CHASSIS PARTS LOCATION



CA1 (6 pcs.) -----Panel M'tg. Screws, Black
CA18 (4 pcs.)-------Cabinet M'tg. Screws
CA16 (8 pcs.)-------Bottom Board M'tg. Screws, Red

■ REAR PANEL PARTS



Ref. No.	Part No.	Description	Per Set (Pcs.)
	→SYWA151A	Front Panel, Complete	1
CA7	SGWA1230	Panel Indicator (Use SYWA151A)	(1)
CA8	SUSA42-2	Spring, Glass Plate (Use SYWA151A)	(2)
CA9	SGXA61	Side Panel, Left Side	1
CA10	SGUA28	Glass Plate, Dial	1
CA11	SGXA60	Side Panel, Right Side	1
	→SDTA5-1S	Tuning Shaft, Complete	1
CH29	SDTA6005	Shaft Only } Use SDTA5-1S	(1)
	SDXA705S	Flywheel } Use SDTA5-1S	(1)

■ REPLACEMENT PARTS LIST

NOTES
1 Part numbers are indicated on most mechanical parts. Please use this part number for parts orders

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
INTEGRATED CIRCUIT ····· FM Circuit				
IC101	SVIALA3300	FM MPX Circuit	1	
INTEGRATED CIRCUIT ····· CD-4 Demodulator Circuit				
IC(301)×2	SVIQSI5022	CD-4 Demodulator	2	
TRANSISTORS ····· FM, AM, AF & Power Source Circuit				
TR1	3SK39Q	FM RF Amplifier	1	
TR2	2SC922M	FM Mixer	1	
TR3	2SC839H	FM Oscillator	1	
TR4, 5, 6, 101~109	2SC829C	AM Mix, Osc & IF Amplifier, FM IF & Muting Amplifier	12	
TR7, 111, 112	2SA666Q	AM & FM AF Amplifier	3	
TR110, (604)×4	2SC828R	Muting Switching & Thermo Compensation	5	
TR113	2SC1318R	Stereo Indicator Switching	1	
TR114	2SA733MAP	Stereo Indicator Lamp Driver	1	
TR401, 402, 403, 404, 405, 406	2SA722T	4 channel Matrix Circuit	6	
TR(601, 602)×4	2SA666A-AD3	Differential Amp. (Use in pairs)	8	
TR(603)×4	2SC983Y	Pre Driver Amplifier	4	
TR(605)×4	2SC1567R	Driver Amplifier	4	
TR(606)×4	2SA794R	Driver Amplifier	4	
TR(607, 608)×4	2SC793Y	Power Amplifier	8	
TR701, 702	2SA684Q	Ripple Filter	2	
TR703	2SD330D	Voltage Stabilizer	1	
TR704	2SC1383R	Voltage Stabilizer	1	
TR705, 706, 708	2SA720R	Speaker Protection Switching	3	
TR707	2SC1384Q	Protection Relay Driver	1	
TRANSISTORS ····· CD-4 Demodulator Circuit				
TR201, 202, (307)×2	2SK30A-Y	Gain Control &,Lock Range Control	4	
TR203, 204, 205, 206, (305)×2	2SC828R	Lock Range & Auto Separation	6	
TR211, 212	2SA722T	2 channel Amplifier	2	
TR213, 216, (306)×2	2SA564R	Ripple Filter, CD-4 Radar Switching & Auto Separation	4	
TR214, 215	2SC1327T	Semi Conductor Muting	2	
TR(301, 302, 303, 304)×2	2SA564A-R	Auto Separation	8	
DIODES & VARIATITE ····· FM, AM, AF & Power Source Circuit				
D1, 2, 3, 4, 101, 109	0A99	FM/AM AGC & AM Detector	6	
D51, 52, 53, 54	RVD10D1	Output Level Meter Detector	4	
D102, 103	2-0A99	FM Discriminator	1pair	
D104, 105, 106, 107, 108, 110, (601)×4	MA150	Meter & Muting Detector, Shock Noise Silencer	10	
D702	SVDAEQA0105T	5V Zener, Shock Noise Silencer	1	○
D703, 704, 705	SVDA10D1M	Rectifier	3	
D706	SVDAEQB0109	9V Zener, Power Source	1	
D707	SVDAEQA0114R	14V Zener, Power Source	1	
D708	SVDAEQA0115R	15V Zener, Shock Noise Silencer	1	
D709	SVDAEQA0108R	8V Zener, Power Source	1	
D710	RVDSG5TS	Rectifier	1	
D711	RVDSG5TR	Rectifier	1	
V1	EYV320D1R2J3	Variatite, AOC	1	

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
DIODES ····· CD-4 Demodulator Circuit				
D201, 202, (303, 304, 305, 307, 308)×2	0A99	Lock Range Control, 2ch, 4ch. Muting & Auto Separation	12	
D203, 204, 205, 206, 207, 208, 209, (301, 302, 306, 309)×2	MA150	Semi Conductor Muting & Noise Cancel, VCO Stop, 2ch. 4ch. Muting & Auto Separation	15	
THERMISTORS & POSISTOR				
TH(601)×4	RRT251	Thermistor, Driver Circuit	4	
TH701	SRPY101H102N	Posistor, Power Source	1	○
COILS & TRANSFORMERS ····· FM, AM & Power Source Circuit				
L1	SLAA4W1-3	Balun Coil	1	
L2	SLAA4N9	FM Antenna Coil	1	
L3	RLQY25S5	Choke Coil	1	
L4	SLDA4N18	FM DET Coil	1	
L5	RLQY15G5	Choke Coil	1	
L6	SLOA4N9	FM OSC Coil	1	
L7, 10, 106	SLQX151-1Y	Choke Coil	3	
L8	SLFA2E15	AM Antenna Coil	1	
L9	SLOA2C6	AM OSC Coil	1	
L101	SLIA4B1	FM AGC Coil	1	
L102, 103, 104, 105, 701, 702, 703	SLQX101-2D	Choke Coil	7	
T1	RLI7W105S-T	AM 1st IF Transformer	1	
T2	RLI2C450	AM 2nd IF Transformer	1	
T101	SLIA4C541	FM DISCRI Transformer (P)	1	
T102	SLIA4C56	FM DISCRI Transformer (S)	1	
T103, 104	SLIA4C241	FM Muting IF Transformer, (P)&(S)	2	
T105, 106	SLMA1Z2-K	19kHz & 38kHz Coil	1	
T701	SLTA5S6S	Power Transformer	1	○
COILS & TRANSFORMERS ····· CD-4 Demodulator Circuit				
L201, 202	SLQX101-2D	Choke Coil	2	
L(301)×2	SLQR104-1K	Choke Coil	2	
T201, 202	EUL-BPF204	Low Pass Filter	2	
T(302)×2	EUL-BPF202	Band Pass Filter } Pair	2	
T(303)×2	EUL-BPF203	Band Pass Filter } Pair	2	
CERAMIC FILTERS				
CF1, 101, 102	RVFCF10M12CG	FM IF Circuit, Green(10.6MHz)	each 3	
	RVFCF10M12CB	FM IF Circuit, Black(10.65MHz)		
	RVFCF10M12CR	FM IF Circuit, Red(10.7MHz)		
	RVFCF10M12CW	FM IF Circuit, White(10.75MHz)		
	RVFCF10M12CY	FM IF Circuit, Yellow(10.8MHz)		
RESISTORS ····· FM, AM, AF & Power Source Circuit				
R519, 520	ERD14VJ390	39Ω, 1/4W, ± 5%, Carbon	2	
R32, 51, 52, 53, 54	ERD14VJ470	47Ω, 1/4W, ± 5%, Carbon	5	
R122, 127	ERD14VJ820	82Ω, 1/4W, ± 5%, Carbon	2	
R18	ERD14VJ101	100Ω, 1/4W, ± 5%, Carbon	1	
R55, 56, 57, 58	ERD14VJ181	180Ω, 1/4W, ± 5%, Carbon	4	
R126	ERD14VJ221	220Ω, 1/4W, ± 5%, Carbon	1	
R116, 151	ERD14VJ271	270Ω, 1/4W, ± 5%, Carbon	2	
R146, 147	ERD14VJ331	330Ω, 1/4W, ± 5%, Carbon	2	
R7, 109	ERD14VJ391	390Ω, 1/4W, ± 5%, Carbon	2	
R8, 27, 107	ERD14VJ561	560Ω, 1/4W, ± 5%, Carbon	3	
R137, 707	ERD14VJ681	680Ω, 1/4W, ± 5%, Carbon	2	

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
R11, 13, 117, 119, 123, 124, 431, 432, 407, 408	ERD14VJ102	1kΩ, 1/4W, ± 5%, Carbon	10	
R14	ERD14VJ122	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R441	ERD14VJ222	2.2kΩ, 1/4W, ± 5%, Carbon	1	
R148	ERD14VJ272	2.7kΩ, 1/4W, ± 5%, Carbon	1	
R125, 132, 135, 136, 434, 435, 710	ERD14VJ332	3.3kΩ, 1/4W, ± 5%, Carbon	7	
R436, 451, 452	ERD14VJ392	3.9kΩ, 1/4W, ± 5%, Carbon	3	
R19, 24, 128, 144, 145, 433	ERD14VJ472	4.7kΩ, 1/4W, ± 5%, Carbon	6	
R20, 134, 449, 450, 513, 514, 515, 516	ERD14VJ562	5.6kΩ, 1/4W, ± 5%, Carbon	8	
R28, 133	ERD14VJ682	6.8kΩ, 1/4W, ± 5%, Carbon	2	
R409, 410, 713	ERD14VJ822	8.2kΩ, 1/4W, ± 5%, Carbon	3	
R17, 131, 142, 143, 411, 412, 455	ERD14VJ103	10kΩ, 1/4W, ± 5%, Carbon	7	
R149, 417, 418, 502, 503, 504, 505, 506, 507, 508	ERD14VJ123	12kΩ, 1/4W, ± 5%, Carbon	10	
R10, 26, 437, 438, 711	ERD14VJ153	15kΩ, 1/4W, ± 5%, Carbon	5	
R6, 419, 420, 423, 424	ERD14VJ183	18kΩ, 1/4W, ± 5%, Carbon	5	
R9	ERD14VJ223	22kΩ, 1/4W, ± 5%, Carbon	1	
R443, 444, 712	ERD14VJ273	27kΩ, 1/4W, ± 5%, Carbon	3	
R421, 422, 425, 453, 454, 709	ERD14VJ333	33kΩ, 1/4W, ± 5%, Carbon	6	
R447, 448	ERD14VJ683	68kΩ, 1/4W, ± 5%, Carbon	2	
R5, 405, 406, 427, 428, 749	ERD14VJ823	82kΩ, 1/4W, ± 5%, Carbon	6	
R29, 509, 510, 511, 512	ERD14VJ104	100kΩ, 1/4W, ± 5%, Carbon	5	
R30, 140, 141	ERD14VJ124	120kΩ, 1/4W, ± 5%, Carbon	3	
R403, 404, 413, 414, 415, 416, 429, 430, 439, 440	ERD14VJ154	150kΩ, 1/4W, ± 5%, Carbon	10	
R25, 714	ERD14VJ184	180kΩ, 1/4W, ± 5%, Carbon	2	
R22, 445, 446, 734, 735	ERD14VJ224	220kΩ, 1/4W, ± 5%, Carbon	5	
R401, 402, 426	ERD14VJ274	270kΩ, 1/4W, ± 5%, Carbon	3	
R456, 457	ERD14VJ824	820kΩ, 1/4W, ± 5%, Carbon	2	
R(618, 620)×4	ERD14FJ100	10Ω, 1/4W, ± 5%, Carbon	8	
R750	ERD14FJ390	39Ω, 1/4W, ± 5%, Carbon	1	
R517, 518	ERD14TJ390	39Ω, 1/4W, ± 5%, Carbon	2	
R521, 522, 523, 524, (609)×4	ERD14TJ820	82Ω, 1/4W, ± 5%, Carbon	8	
R4, 103, (602)×4	ERD14TJ101	100Ω, 1/4W, ± 5%, Carbon	6	
R(617, 619, 621)×4	ERD14FJ101	100Ω, 1/4W, ± 5%, Carbon	12	
R705	ERD14TJ181	180Ω, 1/4W, ± 5%, Carbon	1	
R529, 530, 531, 532, (614)×4	ERD14TJ271	270Ω, 1/4W, ± 5%, Carbon	8	
R120, (616)×4	ERD14TJ561	560Ω, 1/4W, ± 5%, Carbon	5	
R533, 534, 535, 536, 706	ERD14TJ681	680Ω, 1/4W, ± 5%, Carbon	5	
R721, 722, 723, 724, 729	ERD14FJ681	680Ω, 1/4W, ± 5%, Carbon	5	
R106, 111, 115	ERD14TJ821	820Ω, 1/4W, ± 5%, Carbon	3	
R12, (615)×4	ERD14TJ102	1kΩ, 1/4W, ± 5%, Carbon	5	
R113	ERD14TJ122	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R(606)×4	ERD14TJ182	1.8kΩ, 1/4W, ± 5%, Carbon	4	
R(605)×4	ERD14TJ222	2.2kΩ, 1/4W, ± 5%, Carbon	4	
R129	ERD14TJ272	2.7kΩ, 1/4W, ± 5%, Carbon	1	
R16, 21, (601)×4	ERD14TJ332	3.3kΩ, 1/4W, ± 5%, Carbon	6	
R105	ERD14TJ392	3.9kΩ, 1/4W, ± 5%, Carbon	1	
R(608, 613)×4, 703	ERD14TJ472	4.7kΩ, 1/4W, ± 5%, Carbon	9	
R15, 130, 150	ERD14TJ562	5.6kΩ, 1/4W, ± 5%, Carbon	3	
R102, 104, 114	ERD14TJ682	6.8kΩ, 1/4W, ± 5%, Carbon	3	
R23, 139, 537, 538	ERD14TJ822	8.2kΩ, 1/4W, ± 5%, Carbon	4	
R108, 110, 112, 442, 501, 525, 526, 527, 528, (607)×4	ERD14TJ123	12kΩ, 1/4W, ± 5%, Carbon	13	
R702	ERD14TJ153	15kΩ, 1/4W, ± 5%, Carbon	1	
R725, 726, 727, 728	ERD14TJ183	18kΩ, 1/4W, ± 5%, Carbon	4	
R121	ERD14 J273	27kΩ, 1/4W, ± 5%, Carbon	1	
R118	ERD14 J333	33kΩ, 1/4W, ± 5%, Carbon	1	
R101	ERD14 J473	47kΩ, 1/4W, ± 5%, Carbon	1	
R(610)×4	ERD14 J563	56kΩ, 1/4W, ± 5%, Carbon	4	
R(604)×4	ERD14VJ823	82kΩ, 1/4W, ± 5%, Carbon	6	
1010, 1011 R3	ERD14VJ104	100kΩ, 1/4W, ± 5%, Carbon	1	
R1, 2	ERD14VJ154	150kΩ, 1/4W, ± 5%, Carbon	2	

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
R138	ERD14TJ224	220kΩ, 1/4W, ± 5%, Carbon	1	
R(603)×4	ERD14TJ824	820kΩ, 1/4W, ± 5%, Carbon	4	
R701	ERD18FJ4R7	4.7Ω, 1/8W, ± 5%, Carbon	1	
R717, 718, 719, 720	ERX1ANJ100	10Ω, 1W, ± 5%, Metallic	4	
R715	ERD12TJ471	470Ω, 1/2W, ± 5%, Carbon	1	
R(612)×4	ERD12TJ821	820Ω, 1/2W, ± 5%, Carbon	4	
R(611)×4	ERD12TJ152	1.5kΩ, 1/2W, ± 5%, Carbon	4	
R31	ERD12TJ184	180kΩ, 1/2W, ± 5%, Carbon	1	
R(622, 623)×4	ERX3ANJR56	0.56Ω, 3W, ± 5%, Metallic	8	○
R742	ERX3ANJ100	10Ω, 3W, ± 5%, Metallic	1	○
R730, 731, 732, 733	ERG3ANJ331	330Ω, 3W, ± 5%, Metallic	4	○
R740, 741	ERG2ANJ821	820Ω2 2W, ± 5%, Metallic	2	○
R708	ERC12GK335Z	3.3MΩ, 1/2W, ±10%, Solid	1	

RESISTORS ····· CD-4 Demodulator Circuit

R285, (369)×2	ERD14VJ101	100Ω, 1/4W, ± 5%, Carbon	3	
R(324, 372)×2	ERD14VJ151	150Ω, 1/4W, ± 5%, Carbon	4	
R233, 234	ERD14VJ331	330Ω, 1/4W, ± 5%, Carbon	2	
R239, 240, 290, (304)×2	ERD14VJ471	470Ω, 1/4W, ± 5%, Carbon	5	
R237, 238	ERD14VJ681	680Ω, 1/4W, ± 5%, Carbon	2	
R267, 268, (305, 308, 331, 351, 357)×2	ERD14VJ102	1kΩ, 1/4W, ± 5%, Carbon	12	
R273, 274, 288	ERD14VJ152	1.5kΩ, 1/4W, ± 5%, Carbon	3	
R(321, 322)×2	ERD14VJ272	2.7kΩ, 1/4W, ± 5%, Carbon	4	
R235, 236, 257, (318, 329, 332)×2	ERD14VJ332	3.3kΩ, 1/4W, ± 5%, Carbon	9	
R213, 214, 286, 292, (314)×2	ERD14VJ392	3.9kΩ, 1/4W, ± 5%, Carbon	6	
R217, 218, 272, 283, 284, (316, 347)×2	ERD14VJ472	4.7kΩ, 1/4W, ± 5%, Carbon	9	
R293	ERD14VJ562	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R265, 266	ERD14VJ682	6.8kΩ, 1/4W, ± 5%, Carbon	2	
R(319)×2	ERD14VJ822	8.2kΩ, 1/4W, ± 5%, Carbon	2	
R227, 228, 279, 280, 396, 397, (333, 337, 338, 341, 342, 346, 348, 350, 356)×2	ERD14VJ103	10kΩ, 1/4W, ± 5%, Carbon	24	
R203, 204	ERD14VJ123	12kΩ, 1/4W, ± 5%, Carbon	2	
R209, 210, (328, 330)×2	ERD14VJ153	15kΩ, 1/4W, ± 5%, Carbon	6	
R201, 202, 205, 206, 225, 226	ERD14VJ183	18kΩ, 1/4W, ± 5%, Carbon	6	
R223, 224, 259, 260, 261, 262, 281, 282, (312)×2	ERD14VJ223	22kΩ, 1/4W, ± 5%, Carbon	10	
R(343)×2	ERD14VJ273	27kΩ, 1/4W, ± 5%, Carbon	2	
R219, (325)×2	ERD14VJ333	33kΩ, 1/4W, ± 5%, Carbon	3	
R211, 212, 231, 232, 255, 256, (352, 354, 355)×2	ERD14VJ473	47kΩ, 1/4W, ± 5%, Carbon	12	
R221, 241, 242, (320)×2	ERD14VJ563	56kΩ, 1/4W, ± 5%, Carbon	5	
R(302)×2	ERD14VJ683	68kΩ, 1/4W, ± 5%, Carbon	2	
R207, 208	ERD14VJ823	82kΩ, 1/4W, ± 5%, Carbon	2	
R215, 216, 229, 230, 243, 251, 252, 263, 264, 269, 270, 289, 291, 294, 295, 296, 297, (301, 310, 362, 365)×2	ERD14VJ104	100kΩ, 1/4W, ± 5%, Carbon	25	
R275, 276	ERD14VJ124	120kΩ, 1/4W, ± 5%, Carbon	2	
R(311)×2	ERD14VJ154	150kΩ, 1/4W, ± 5%, Carbon	2	
R(336)×2	ERD14VJ184	180kΩ, 1/4W, ± 5%, Carbon	2	
R298, 299, (360)×2	ERD14VJ224	220kΩ, 1/4W, ± 5%, Carbon	4	
R277, 278	ERD14VJ274	270kΩ, 1/4W, ± 5%, Carbon	2	
R271, (353)×2	ERD14VJ334	330kΩ, 1/4W, ± 5%, Carbon	3	
R(370)×2	ERD14VJ394	390kΩ, 1/4W, ± 5%, Carbon	2	
R(340, 349)×2	ERD14VJ564	560kΩ, 1/4W, ± 5%, Carbon	4	
R(306, 317)×2	ERD14VJ824	820kΩ, 1/4W, ± 5%, Carbon	4	
R(326, 327)×2	ERD14TJ151	150Ω, 1/4W, ± 5%, Carbon	4	
R287, 399	ERD14TJ331	330Ω, 1/4W, ± 5%, Carbon	2	
R(358)×2	ERD14TJ102	1kΩ, 1/4W, ± 5%, Carbon	2	
R(307, 309)×2	ERD14TJ222	2.2kΩ, 1/4W, ± 5%, Carbon	4	
R258	ERD14TJ332	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R(315)×2	ERD14TJ822	8.2kΩ, 1/4W, ± 5%, Carbon	2	

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
R(313, 371)×2	ERD14TJ223	22kΩ, 1/4W, ± 5%, Carbon	4	
R(363)×2	ERD14TJ473	47kΩ, 1/4W, ± 5%, Carbon	2	
R222	ERD14TJ563	56kΩ, 1/4W, ± 5%, Carbon	1	
R244, (364, 366)×2	ERD14TJ104	100kΩ, 1/4W, ± 5%, Carbon	5	
R(345)×2	ERD14TJ184	180kΩ, 1/4W, ± 5%, Carbon	2	
R200, 220	ERD14TJ274	270kΩ, 1/4W, ± 5%, Carbon	2	
R(303)×2	ERD14TJ334	330kΩ, 1/4W, ± 5%, Carbon	2	
R(335, 344, 359)×2	ERC14GK185	1.8MΩ, 1/4W, ±10%, Solid	6	
R(361)×2	ERC14GK825	8.2MΩ, 1/4W, ±10%, Solid	2	
R(373)×2	ERD14VJ474	470kΩ, 1/4W, ± 5%, Carbon	2	
VARIABLE RESISTORS ····· FM, AM & AF Circuit				
VR101	EVLS3AA00B24	20kΩ(B), Signal Meter Adjustment	1	
VR102, 51, 52, 53, 54	EVLS3AA00B54	50kΩ(B), VU Meter & Muting Adj.	5	
VR103	EVLS3AA00B13	1kΩ(B), Separation Adjustment	1	
VR501, 502, 503, 504	EVH56A037BF5	250kΩ(B), Channel Level Control	4	○
VR505	EWINXA030BF5	250kΩ(B), Volume Control	1	
VR506, 507	EWI43A030C14	10kΩ(C), Bass & Treble Control	2	○
VR(601)×4	EVLS0AA00B14	10kΩ(B), DC Unbalance Adjustment	4	
VR(602)×4	EVLS0AA00B52	500Ω(B), ICQ Adjustment	4	
VARIABLE RESISTORS ····· CD-4 Demodulator Circuit				
VR201, 202	EVLS3AA00B24	20kΩ(B), CD-4 Gain Adjustment	2	
VR(301)×2	EVLS0AA00B15	100kΩ(B), ANRS	2	
VR(302)×2	EVLS0AA00B16	1MΩ(B), ANRS	2	
VR(303, 304)×2	EVLS0AA00B14	10kΩ(B), VCO, Auto Separation	4	
VR(305)×2	EVLS0AA00B24	20kΩ(B), Lock Range	2	
CAPACITORS ····· FM, AM, AF & Power Source Circuit				
C9	ECCD1H010CC	1pF, 50WV, ±0.25pF, Ceramic	1	
C33, 127	ECCD1H050CC	5pF, 50WV, ±0.25pF, Ceramic	2	
C124	ECCD1H070DC	7pF, 50WV, ±0.5pF, Ceramic	1	
C19	ECCD1H100KT	10pF, 50WV, ±10%, Ceramic	1	
C6	ECCD1H100KC	10pF, 50WV, ±10%, Ceramic	1	
C11	ECCD1H120KT	12pF, 50WV, ±10%, Ceramic	1	
C1, 122	ECCD1H120KC	12pF, 50WV, ±10%, Ceramic	2	
C12, 14	ECCD1H150KC	15pF, 50WV, ±10%, Ceramic	2	
C5, 120	ECCD1H180KC	18pF, 50WV, ±10%, Ceramic	2	
C(606)×4	ECCD1H220K	22pF, 50WV, ±10%, Ceramic	4	
C13	ECCD1H390KC	39pF, 50WV, ±10%, Ceramic	1	
C115	ECCD1H470KR	47pF, 50WV, ±10%, Ceramic	1	
C(602)×4	ECCD1H470K	47pF, 50WV, ±10%, Ceramic	4	
C116, 117	ECCD1H101K	100pF, 50WV, ±10%, Ceramic	2	
C7, (603)×4	ECCD1H181K	180pF, 50WV, ±10%, Ceramic	5	
C128, 129, 403, 404	ECCD1H221K	220pF, 50WV, ±10%, Ceramic	4	
C2, 3, 4, 8, 15	ECKD1H102PF	0.001μF, 50WV, $^{+100}_{-0}$%, Ceramic	5	
C10, 17, 18, 103, 104, 108, 111, 705, 707, 712, 715, 718, 722, 749	ECKE1H103PF	0.01μF, 50WV, $^{+100}_{-0}$%, Ceramic	14	
C28	ECKE1H103MD	0.01μF, 50WV, ±20%, Ceramic	1	
C26, 107, 118, 121, 123, 125, 126, 143, 713, 716, 719, 723	ECKE1H223PF	0.022μF, 50WV, $^{+100}_{-0}$%, Ceramic	12	
C(608)×4	ECKD2H331KB	330pF, 500WV, ±10%, Ceramic	4	
C706	ECKD2H103PF	0.01μF, 500WV, $^{+100}_{-0}$%, Ceramic	1	
C136	ECQM05152KZ	0.0015μF, 50WV, ±10%, Polyester	1	
C505, 506, 507, 508	ECQM05332KZ	0.0033μF, 50WV, ±10%, Polyester	4	
C31	ECQM05392KZ	0.0039μF, 50WV, ±10%, Polyester	1	
C21	ECQM05103KZ	0.01μF, 50WV, ±10%, Polyester	1	
C509, 510, 511, 512	ECQM05183KZ	0.018μF, 50WV, ±10%, Polyester	4	
C22, 101, 102, 105, 106, 109, 110, 113, 114, 144	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	10	
C412, 525, 526, 527, 528	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	5	
C20, 23, 411, 501, 502, 503, 504	ECQM05333KZ	0.033μF, 50WV, ±10%, Polyester	7	
C145, 146	ECQM05562JZ	0.005μF, 50WV, ± 5%, Poliester	2	

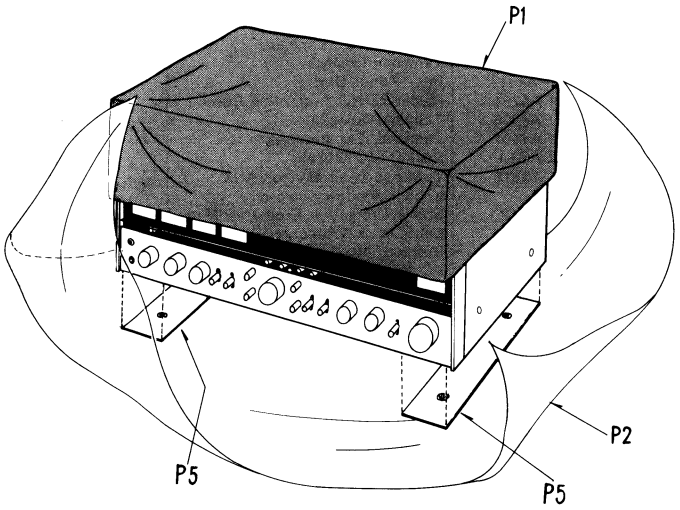
Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
C725, 726, 727, 728	ECQM05473KZ	0.047μF, 50WV, ±10%, Polyester	4	
C513, 514, 515, 516	ECQM05334KZ	0.33μF, 50WV, ±10%, Polyester	4	
C529, 530, 531, 532	ECQM05394KZ	0.39μF, 50WV, ±10%, Polyester	4	
C748	ECQH2105MZ	1μF, 250WV, ±20%, Polyester	1	
C730, 731	ECQU2A103MD	0.01μF, 250VAC, ±20%, Polyester	2	
C(609)×4	ECEA6V47	47μF, 6.3WV, Electrolytic	4	
C142	ECEA6V100	100μF, 6.3WV, Electrolytic	1	
C27, 134, 750	ECEA10V100	100μF, 10WV, Electrolytic	3	
C717	ECEA10V470	470μF, 10WV, Electrolytic	1	
C25, 51, 52, 53, 54, 131	ECEA16V10	10μF, 16WV, Electrolytic	6	
C721	ECEA16V470	470μF, 16WV, Electrolytic	1	
C710	ECEA16V1000	1000μF, 16WV, Electrolytic	1	
C419, 420	ECAF25ER22X	0.22μF, 25WV, Electrolytic	2	
C130	ECAG25ER33S	0.33μF, 25WV, Electrolytic	1	
C407, 408	ECAG25ER68S	0.68μF, 25WV, Electrolytic	2	
C24, 55, 56, 57, 58, 132, 135	ECEA25V3R3	3.3μF, 25WV, Electrolytic	7	
C32, 119	ECEA25V4R7	4.7μF, 25WV, Electrolytic	2	
C517~524	ECEA25V4R7LM	4.7μF, 25WV, Electrolytic	8	
C141	ECEA25V100	100μF, 25WV, Electrolytic	1	
C720, 729	ECEA25V220	220μF, 25WV, Electrolytic	2	
C421, 708	ECEA25V470	470μF, 25WV, Electrolytic	2	
C(605)×4	ECEA25G220	220μF, 25WV, Electrolytic	4	○
C29, 30, 401, 402, 405, 406, 409, 410, 413	ECEA50VR47G	0.47μF, 50WV, Electrolytic	9	
C150	ECEA50V1	1μF, 50WV, Electrolytic	1	
C112, 133, 137, 138, 139, 140, 415, 417, 418 760	ECEA50V1G	1μF, 50WV, Electrolytic	10	
C(601)×4	ECEA50V3R3	3.3μF, 50WV, Electrolytic	4	
C(604)×4	ECEA50V47	47μF, 50WV, Electrolytic	4	
C422, (607)×4, 711, 714	ECEA50V100	100μF, 50WV, Electrolytic	7	
C703, 704	ECEA50V220	220μF, 50WV, Electrolytic	2	
C709	ECEA50V470	470μF, 50WV, Electrolytic	1	
C701, 702	ECET50R6800Y	6800μF, 50WV, Electrolytic	2	○
CAPACITORS ····· CD-4 Demodulator Circuit				
C219, 220	ECCD1H220K	22pF, 50WV, ±10%, Ceramic	2	
C203, 204, (315, 340, 341)×2	ECCD1H101K	100pF, 50WV, ±10%, Ceramic	8	
C(334)×2	ECCD1H151K	150pF, 50WV, ±10%, Ceramic	2	
C233, 234	ECCD1H181K	180pF, 50WV, ±10%, Ceramic	2	
C241, 242	ECCD1H331K	330pF, 50WV, ±10%, Ceramic	2	
C238,	ECKE1H102MY	0.001μF, 50WV, ±20%, Ceramic	1	
C217, 218,	ECQM05102KZ	0.001μF, 50WV, ±10%, Polyester	2	
C205, 206	ECQS1821JZ	820pF, 125WV, ± 5%, Styrol	2	
C(322)×2	ECQM05222KZ	0.0022μF, 50WV, ±10%, Polyester	2	
C201, 202	ECQM05272JZ	0.0027μF, 50WV, ± 5%, Polyester	2	
C(309, 316)×2	ECQM05272KZ	0.0027μF, 50WV, ±10%, Polyester	4	
C243, 244, (347)×2	ECQM05472KZ	0.0047μF, 50WV, ±10%, Polyester	4	
C(332, 333)×2	ECQM05562KZ	0.0056μF, 50WV, ±10%, Polyester	4	
C(321)×2	ECQM05682KZ	0.0068μF, 50WV, ±10%, Polyester	2	
C(348)×2	ECQM05822KZ	0.0082μF, 50WV, ±10%, Polyester	2	
C221, 222, 346)×2	ECQM05103KZ	0.01μF, 50WV, ±10%, Polyester	4	
C(308, 343)×2	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	4	
C225, 226, 253 254, (306)×2	ECQM05333KZ	0.033μF, 50WV, ±10%, Polyester	6	
C215, 216	ECQM05473KZ	0.047μF, 50WV, ±10%, Polyester	2	
C(338)×2	ECQM05474KZ	0.47μF, 50WV, ±10%, Polyester	2	
C211, 212, 213, 214 (303)×2	ECEA6V33	33μF, 6.3WV, Electrolytic	6	
C(302)×2	ECEA6V47	47μF, 6.3WV, Electrolytic	2	
C(301)×2	ECEA6V100	100μF, 6.3WV, Electrolytic	2	
C248, 250	ECEA6V470	470μF, 6.3WV, Electrolytic	2	
C(349)×2	ECEA10V33	33μF, 10WV, Electrolytic	2	
C247	ECEA10V47	47μF, 10WV, Electrolytic	1	
C209, 210, (307, 311, 329, 317, 335)×2	ECEA16V10	10μF, 16WV, Electrolytic	12	
C(331)×2	ECEA16V33	33μF, 16WV, Electrolytic	2	
C256	ECEA16V100	100μF, 16WV, Electrolytic	1	
C255	ECEA16V220	220μF, 16WV, Electrolytic	1	
C(314)×2	ECEA25V3R3	3.3μF, 25WV, Electrolytic	2	
C229, 230, 231, 232, 239, 240, 245, 246	ECSZ25EF3R3	3.3μF, 25WV, Electrolytic	8	
C(323, 324)×2	ECSZ25EF1	1μF, 25WV, Electrolytic	4	
C223, 224, 249, 252, (312, 325, 328, 330, 336, 337, 342, 344)×2	ECEA50V1	1μF, 50WV, Electrolytic	20	

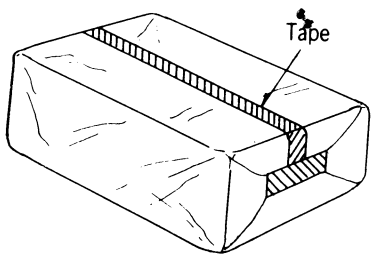
Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
C235,236, (305, 310, 318, 319, 320, 339)×2	ECEA50V1G	1μF, 50WV, Electrolytic	14	
C237	ECEA50V10	10μF, 50WV, Electrolytic	1	
C251	ECEA50V100	100μF, 50WV, Electrolytic	1	
C(313)×2	ECAG25ER1K	0.1μF, 25WV, Electrolytic	2	
C(350)×2	ECCD1H020CC	2pF, 50WV, ±0.25pF, Ceramic	2	
C(304)×2	ECCD1H331K	330pF, 50WV, ±10%, Ceramic	2	
VARIABLE CAPACITORS				
CV1, 2, 3, 4, 5 (CT4, 5)	ECV5MX25X14G	Tuning Gang, FM & AM (Trimmer, AM ANT & OSC)	1	
CT1, 2	ECV1ZW10P32	Trimmer, FM ANT & DET, 10pF	2	
CT3	ECV1ZW06P35	Trimmer, FM OSC, 6pF	1	
COMPONENT COMBINATIONS				
Z1	EXAF203Z471	AM Detector Circuit	1	
Z101	EXA5DL04C	FM Detector Circuit	1	
Z102, 103	SXAM675F	Compensation, FM Charactor	2	
Z701, 702	RXAF103P22HD	Hum Cancel, 0.01μF(×2), 500WV	2	
SWITCHES ····· FM, AM, AF & Power Source Circuit				
S1	SSRA66	Selector Switch	1	
S2	SSRA67	Mode Switch	1	
S3, 4, 5, 6, 7	SSHA46S	Push Switch, VU Meter Range, Tape Monitor 1, 2, 3 & FM Muting	1	○
S8, 9, 10, 11	SSLA19S	Lever Switch, Loudness, Audio Muting, Low & High Filter	4	
S12	ESRC3A5F30AE	Speakers Switch	1	○
S13	ESB7025	Power Source Switch	1	
S14	SSLA36S	CD-4 Hi-Blend Switch	1	○
S17	SSRA71S	Voltage Selector Switch	1	
SWITCHES ····· CD-4 Demodulator Circuit				
S15	QSS-1093	30kHz Compensator Switch	1	
S16	SSRA68	Cartridge Selector Switch	1	
RELAY ····· AF Circuit				
RLY701	SSYA1	Speaker Protection Relay	1	
RELAY ····· CD-4 Demodulator Circuit				
RLY(301)×2	SSYA11	Auto Separation Control Switch	1	
LIGTS				
PL1~10	XAM35K	Dial & Meter Lamp(6.3V 0.25A)	10	
PL11	XAMR18T500A	Dial Pointer Lamp(6.3V 70mA)	1	○
PL12, 13, 14, 19	XAMR41K40B	Indicator Lamp, AM, FM, PHONO & CD-4 Radar(7.5V 75mA)	4	
PL15, 18	XAMR41K40A	Indicator Lamp, AUX & CD-4 (7.5V 75mA)	2	
PL16, 20	XAMR41K40D	Indicator Lamp, 2 CHANNEL & FM STEREO(7.5V 75mA)	2	○
PL17	XAMR41K40C	Indicator Lamp, 4 CHANNEL (7.5V 75mA)	1	
FUSES				
F1	XBA2K70NS5	Power Source (7A)	1	○
F2	XBAS1B3003	Power Source (3A)	1	
F3, 4, 5, 6	XBAS1A4001	Circuit Protection (4A)	4	
F7	XBAS2B3002	Power Source (3A)	1	

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
CABINET PARTS				
CA1	XTV3+8CK	Black Screw, Front Panel M'tg.	6	
CA2	SBNA103	Knob, Speaker, Mode, Selector Switch & Bass, Treble Control	5	
CA3	SBLA2	Knob, Lever Switch	5	
CA4	SBNA102	Knob, Volume Control	1	
CA5	SBNA101	Knob, Channel Level Control	4	
CA6	SBNA111	Knob, Tuning Control	1	
	SYWA151A	Front Panel, Complete	1	○
CA9	SGXA61	Side Panel, Left Side	1	
CA10	SGUA28	Glass Plate, Dial	1	○
CA11	SGXA60	Side Panel, Right Side	1	
CA12	SQXA4102	Sticker	1	○
CA13	SBCA47	Button, Power Source Switch	1	
	SYUA90A	Bottom Board, Complete	1	○
CA14	SKUA360	Bottom Board Only	1	○
CA15	SKLA2-1	Leg, Bottom Board	4	
	SHGA629	Rubber Cushion, Bottom Board	1	
CA16	XTV3+8CR	Red Screw, Bottom Board M'tg.	8	
CA17	SKAA730	Cabinet	1	○
CA18	XSB4+16BVCS	Screw, Cabinet M'tg.	4	
	SYPA291AS	Rear Panel, Complete	1	○
CA19	SNEA404	Nut, Ground Terminal	1	
	SNEA204-2S	Bolt, Ground Terminal	1	
CA20	SJFA3417	Terminal, PHONO	1	
CA21	SGPA451A	Rear Panel Only	1	○
CA22	SJFA5201-1	Holder, Circuit Protection Fuse	2	
CA23	SJFA4806-1	Terminal, Speaker	2	
CA24	SJFA4401	Terminal, Ext. Antenna	1	
CA25	SJSA66-1	Socket, AC Outlet	2	
CA26	SJFA3018	Terminal, Tape Monitor, AUX	1	○
CA27	SBSA7	Knob, Cartridge Selector	1	
CA28	XSN26+12	Screw, Protection Fuse Cap M'tg.	2	
	SJFA5202-1	Cap, Circuit Protection Fuses	2	
CA29	RHR111	Bushing, AC Cord	1	
CA30	SJAA3-1	AC Cord	1	
	SYPA294AS	Rear Panel. Complete (For Italy Only)	1	○
CHASSIS				
CH1	SSMA29	Meter, Output Level (VU)	4	○
CH2	SJJA9-2	Jack, Headphones	2	
CH3	SJSA64	Socket, Circuit Connection, 6pin	6	
CH4	RJV1A	Holder, Meter Lamp	5	
CH5	SUMA10	Mounting, Dial Scale	1	○
CH6	SKDA430	Scale, Dial	1	○
CH7	SHGA649	Rubber, Dial Scale	1	○
CH8	SDR5	Pulley Dial Cord	4	
CH9	SDY11	Shaft, Pulley Lock	4	
CH10	SDY9	Bracket, Pulley & Pulley Shaft	4	
CH11	RDR20	Pulley, Dial Cord	3	
CH12	RNW150-2	Lock Washer, Pulley	3	
CH13	RDY34	Shaft, Pulley	3	
CH14	SDDA391S	Drum, Tuning	1	
	SDSA4121	Spring, Dial Cord	1	
	XXAR3H6S	Screw, Drum M'tg.	2	
CH15	SDAA8	Mounting, Dial Pointer	1	
CH16	SDPA5022	Pointer, Dial	1	
CH17	SHGA202	Bracket, STEREO, 2CH. & 4CH. Indicator	3	
CH18	SHPA522	Reflection Paper, Dial Light	1	○
CH19	SHGA205	Bracket, Input Source Indicator	1	○
CH20	SJSA65	Socket, Circuit Connection	26	
CH21	SJSA201-1	Holder, Dial Lamp	1	
CH22	RDZ05C	Cord, Dial, 170cm (66⅞")	1 roll	
CH23	SSMA19-2	Meter, Signal Strength	1	
CH24	SJSA63	Socket, Circuit Connection, 4pin	9	
	SJTA701-1	Cramp, Lead Wire	68	
CH25	SJTA308	4pin Terminal, Circuit Connection	9	
CH26	SJTA309	6pin Terminal, Circuit Connection	5	
CH27	SJTA307	1pin Terminal, Circuit Connection	146	
CH28	SUPA2750	Printed Circuit Board Only	1	○
CH29	SDTA5-1S	Tuning Shaft, Complete	1	
CH30	SHEA7	Coupling Rod, Power Switch & Button	1	
	SJSA302	Socket, CD-4 Demodulator IC	2	

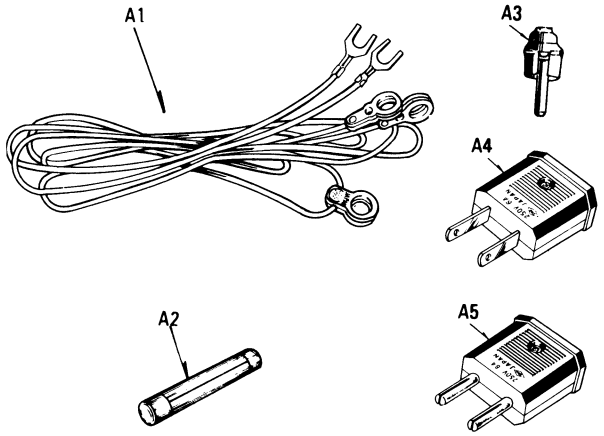
Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
		ACCESSORIES		
A1	SSAA3	FM Antenna Cord	1	
A2	XBAS1A4001	Circuit Protection Fuse(4A)	2	
A3	RJP5	Pin Plug	8	
A4	RJP16AS	AC Plug	1	
A5	RJP17AS	AC Plug	1	
		PACKING PARTS		
P1	SPPA38	Soft Cover	1	○
P2	SPHA6008	Polyethylene Sheet	1	
P3	SPSA103	Pad, Left Side	1	
P4	SPSA104-1	Pad, Right Side	1	○
P5	SPSA97	Pad, Leg	2	
P6	SPGA561A	Carton Box, Outer	1	○
P7	SQFA217	Printed Matter, Complete	1	○
P8	SPSA133	Pad	1	○
P9	SPNA310A	Carton Box, Inner	1	○
P10	SPSA123	Pad	2	
P11	SPSA121	Pad	4	

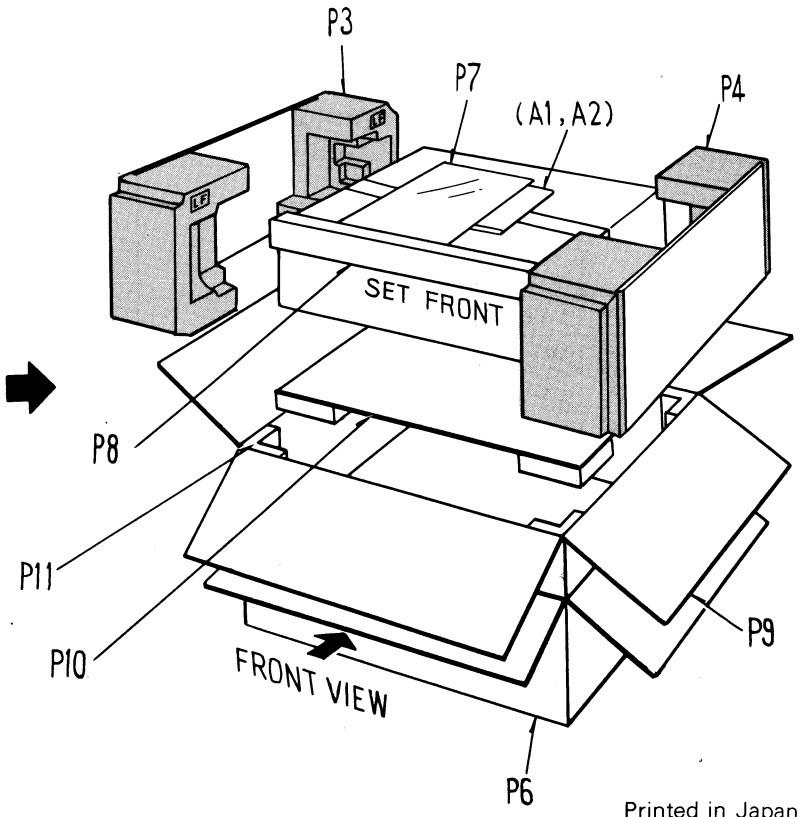
■ PACKING





■ ACCESSORIES





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